The Bristol Medico-Chirurgical Journal.

"Scire est nescire, nisi id me
Scire alius sciret."

SEPTEMBER, 1903.

JOSEPH GRIFFITHS SWAYNE, M.D. (Lond.).

SOMETHING more than the ordinary obituary notice is called for by the decease of one who has been quite the *doyen* of the medical profession of the West of England for many years past.

The name of Swayne has been a household word for several decades, and by his death we lose almost the last of a band of medical men who, in the middle of the last century, did much to advance the fame of Bristol as a medical centre. The Bristol Medico-Chirurgical Society and Journal Committee have to acknowledge with gratitude much assistance from him for many years: as an original member rarely absent from a meeting, as President, and as a frequent contributor both to debates and articles in the Journal, he has done as much as was in his power to further the prosperity of the Society. The members will be glad to have the photographic souvenir opposite, representing him as he was known to us about ten years ago. We have to thank Dr. Swayne's family for the photograph and its reproduction.

Joseph Griffiths Swayne was born on October 18th, 1819, at a house in St. James' Barton, on the north side of the passage

leading to St. James' Square. He was the second son of Mr. John Champeny Swayne, Senior Consulting Accoucheur to the Bristol Lying-in Institution, Lecturer on Midwifery at the Bristol Medical School, and grandson of the Rev. George Swayne, who was for nearly sixty years Vicar of Pucklechurch, Gloucestershire. His mother was the eldest daughter of Dr. Thomas Griffiths, who at that time lived and practised in a house in St. James' Barton, on the site of which Messrs. Cordeux's establishment now stands. He received his early education at the Bristol College, at that time a flourishing proprietary school situated in Park Row, we believe where the Jewish Synagogue now stands, and at that time presided over by Dr. Jerrard, a pedagogue of considerable local eminence. Here he had as contemporaries several whose names have become well known locally, such as the brothers Prichard, the Rev. S. Wayte, Professor Stokes, Mr. H. Nash, Ralph Bernard, and others. (The Bristol College was, we believe, the first attempt at a school of the character of the present public schools in the neighbourhood).

On leaving school he was apprenticed to his father, and was also entered as a pupil at the Bristol Medical School, and at the Royal Infirmary, as dresser, under Mr. Richard Lowe. Here it may be of interest to note that in those days (1837) students at the Infirmary consisted of three classes—house pupils, dressers (or practically surgeon's apprentices, who served for three years), and "walking pupils" (who were allowed to see the practice); it is also noteworthy that at that time many of the lectures at the Medical School commenced at 7.15 a.m. At the Infirmary at that time the surgeons were Messrs. Richard Smith, Jun., Richard Lowe, Nathaniel Smith, Morgan, and Harrison, and the physicians Drs. J. C. Prichard, George Wallis, John Howell, and Henry Riley. Augustin Prichard was a contemporary student. He soon after entered the then newly-formed University of London, and on passing the intermediate examination for the degree of Bachelor of Medicine, he obtained honours in Anatomy and Physiology, being among the first three in that subject.

After completing or nearly completing his term in Bristol

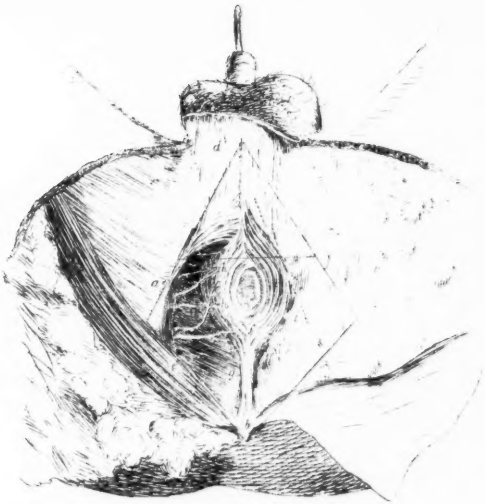

FIG. I.

a. Fascia lata.
b. Coccyx.
c. Superficial fascia of thigh.
d. Deep layer of superficial fascia.
e. Gluteus maximus.
f. External sphincter ani.
g. Levator ani.
h. Inferior hemorrhoidal vessels.

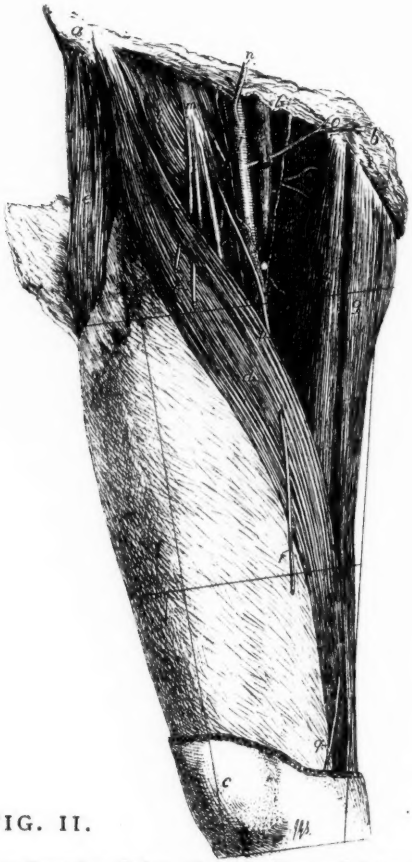

FIG. II.

a. Anterior Superior Spine of Ilium.
b. Pubis.
c. Patella.
d. Sartorius.
e. Tensor Vaginæ Femoris.
f. Adductor longus.
g. Gracilis.
h. Pectineus.
i. Iliacus and Psoas.
j. Femoral Artery.
k. Femoral Vein.
l. Sheath of Vessels.
m. Anterior Crural Nerve.
n. Superficial Epigastric Artery.
o. Inferior External Pudic.
p. Great Saphenous Nerve.
q. Patellar Branch of Great Saphenous Nerve.
r. Middle Cutaneous Nerve.

he entered at Guy's Hospital, and obtained the diplomas of M.R.C.S. and L.S.A. in 1841; he also studied in Paris, and in 1843 graduated as M.B. in the University of London, gaining the gold medals in Medicine and Obstetric Medicine and first-class honours in Surgery; for the gold medal in Medicine he was declared equal with Sir Alfred Baring Garrod. He graduated M.D. in 1845, and for a few years practised in partnership with his father and Mr. S. H. Swayne his younger brother. For a short time he was Demonstrator and then Lecturer on Anatomy at the Bristol Medical School, and in 1845 succeeded his father as Lecturer on Midwifery, which post he held until 1895.

A fact not generally known is that he was engaged for some time on a Manual of Anatomy, the illustrations for which were etched by himself on copper from his own dissections. The publication, however, was forestalled by Ellis's *Dissections;* and as, owing to the liberality with which it was illustrated, his own work could only have been published at a much higher price, he never completed it. We give specimen illustrations of his etchings. (Fig. 1, Perineum, and Fig. 2, Scarpa's Triangle.)

In 1848 he worked vigorously, during the cholera epidemic which then raged in Bristol, in his endeavour to discover the primary cause of the disease, and described a micro-organism which is claimed by many to have anticipated Koch's discovery of the comma bacillus. Some few years ago Mr. Francis Fowke wrote an article in the *British Medical Journal* reviving this claim; he himself did not claim that the micro-organism he discovered was the primary cause, but noted its constant appearance in the dejecta of true cholera cases, and also in water in places where the epidemic was raging. In the pursuit of this research he spent some time in Bridgwater, on the subsidence of the Bristol outbreak, and contracted the disease himself. Fortunately his attack proved to be not a severe one. The publication of the results of these investigations by his co-worker, Dr. Brittan, led to an acrimonious discussion in local medical circles, in which the College of Physicians eventually took part as arbitrator, and vindicated his claim to the discovery. His only complete published work,

Obstetric Aphorisms for the use of Students, was published in 1856, and rapidly attained wide popularity, not only in Great Britain but abroad (it has been translated into two Eastern languages, in addition to European ones), and reached its 10th edition in 1893.

His association with his father led to his adoption of Midwifery as a speciality, and in 1853 he was appointed Physician Accoucheur to the Bristol General Hospital. This, we believe, was the first appointment of the kind made outside London. Unfortunately, as is usually the case with pioneers, his early success was small, added to which his health, undermined by an attack of enteric fever, broke down, and he temporarily lost his eyesight. With a view of regaining his health he decided to travel for a year, and in 1858 took the long sea passage to New Zealand, from which he returned a year later completely restored, and to find himself at the commencement of a long career of success. He was singularly fortunate in practice; we have heard him say that he had never lost a patient from septic infection since his student days, when it was the custom for dissection and practical midwifery to be carried on together. This he used to attribute to the fact that he was always very careful about washing his hands. We have also often heard him state that in his opinion those practising midwifery and surgery should avoid wearing either their beards or hair long, as he had noticed that septic poisoning seemed commoner in the practice of those who adopted these fashions than in that of the clean shaven. From these opinions it will be seen that when the application of antiseptics to midwifery was put on a scientific basis, he, although then an old man, was not likely to oppose this as a fad and a novelty, but at once adopted the principle and carried it out with the greatest thoroughness. Apart from the foregoing as regards new methods, he was absolutely without bias in favour of old methods simply because they were old, and was always ready to examine and try any new method or means which might be suggested to him.

At the same time he was a staunch upholder of methods in which there was good; for example, educated as he was in the days of indiscriminate venesection, he never ceased his advocacy

of its efficiency in puerperal eclampsia, and lived to see venesection again a recognised method of treatment in this affection.

As a lecturer he was clear, concise, and scholarly, always presenting his subject in a way that showed that he realised the difficulties of the student, while impressing his important points on the memory by illustrations drawn from practical experience of cases under his own observation.

He was a Fellow and Past Vice-President of the Obstetrical Society of London, a Fellow of the British Gynæcological Society, and also of the Gynæcological Society of Boston, U.S.A. In 1894 he presided over the section of Obstetrics at the Meeting of the British Medical Association which was held in Bristol.

In 1895 he resigned his post as Professor of Midwifery in University College, to which he was appointed on the amalgamation of University College and the Bristol Medical School, and was appointed Emeritus Professor. As a mark of their esteem and appreciation of his services, his private colleagues, friends, and pupils entertained him at dinner in February, 1895, and presented him with a handsome service of plate, together with an address.

In his private life he was a man of most abstemious habits, of simplicity of mind and singleness of character. To the first undoubtedly his powerful constitution and prolonged physical powers were no doubt due. From the time of his recovery from his attack of enteric to the day of his death he had never spent a day or even breakfasted in bed. He was an exceptionally early riser; until a few years before his death it was his habit to rise at about 5 a.m., and he followed the practice of taking a cold bath every morning until he was nearly eighty years of age. In his youth he was a great athlete, a good boxer, a great walker, a powerful swimmer, a good horseman, a good oar, and no mean rifle shot. He kept up gymnastic exercises, of which he was very fond, until he was well over sixty. He was an enthusiastic volunteer until he was unable to find the time to attend drill. While a member of the Bristol Rifles he gained a gold medal presented to the best judge of distance in the battalion. His uncle commanded the Dyrham Company of

Gloucestershire Volunteers in 1804. He was an artist of no mean order, a pupil of S. Jackson, who had considerable local celebrity in the thirties; he gained several prizes at local exhibitions, and was also a good judge of works of art.

He was also possessed of considerable musical ability and a good baritone voice, and was a member of the Cathedral Choral and Bristol Choral Societies. He used often to describe the glee parties held at Richard Smith's house in his student days, when under the presidency of that venerable surgeon the students used to meet and pass the evening in glee-singing and conviviality. Many amusing stories could he relate of the doings of the medical student of his day. He often used to say that Albert Smith's *Medical Student* was a very fair representation of the proceedings of the more lively spirits; in fact, his stories of the "grinders" classes of his student days showed that Albert Smith, in that case at least, did not exaggerate.

His descriptions of the old political elections and of the doings of the public on those occasions, as well as his recollections of the reform riots in Bristol, were most interesting.

He was a strong Conservative in politics, and a high churchman; for many years he was a member of the choir of All Saints, Clifton, and a strong supporter of that church.

With the work of this Journal Dr. Swayne was in hearty sympathy, and he often helped it by original contributions and by review. Although he had attained the highest point of his professional eminence, and although he was brought into contact in his general work with men who were not born when he began practice, he was ever ready to fall in with their often-expressed views of the way in which his contributions were ultimately to appear in print. His reviews of books were most thorough, and he could always give ample reason for any adverse criticisms which he thought it necessary to make.

Few men were more regular in their attendance at the Meetings of the local Medical Societies than Dr. Swayne, and there were not many subjects, even outside his special work, on which he was not able to say something that was of interest or of practical utility. Many of us will never forget the striking way in which he would often intervene in a discussion with

some very apposite observation when it seemed that he had not been taking any interest in the question before the meeting.

Readers of this Journal had an opportunity of seeing some evidence of Dr. Swayne's skill in portraiture when in the number for December, 1892,[1] were reproduced some sketches which he made in 1840 in his note-book when he was a student at the School.

It can seldom have occurred in the history of medicine that any member of their staff could have had a longer connection with a hospital and medical school than had Dr. Swayne, extending as it did in one case, either as Physician Accoucheur or Consulting Physician Accoucheur, to a period of exactly fifty years, and in the case of the Medical School to fifty-eight years, for the first fifty years of which time he was engaged in lecturing on Midwifery, and during the last eight years as Emeritus Professor in the same subject, being not only the first Professor of Midwifery but also the first Emeritus Professor ever elected on any subject at Bristol University College. Dr. Swayne was also the first Physician Accoucheur ever elected at the Bristol General Hospital, his election dating from the year 1853, when the Hospital was opened. His position on the staff was not quite that which obtains to-day, as his work was chiefly confined to out-patients, and no beds in the Hospital were set apart for his special department, it being understood that he performed no abdominal operation. Abdominal operations were during Dr. Swayne's period of active work at the Hospital not common, and cases requiring operation were handed over to the surgeon; notwithstanding this, his opinion was always sought and much valued by his colleagues in all abdominal cases. Dr. Swayne was elected Lecturer on Midwifery in the Bristol Medical School in the year 1845, and his connection with the School continued up to the time of his death. He saw the School pass through many trying times and much adversity until finally it rested in its present quarters as a part of Bristol University College. Dr. Swayne took a large share in bringing about this desirable object. Not only did he devote much time to

[1] Vol. x., pp. 286 to 291.

his lectures from which many generations of students profited, and by his general conciliatory spirit smoothed over many difficulties in the working of the School; he continued to the end of his life to take a warm interest in the School, and when the new wing was opened in 1895, he was one of the largest if not actually the largest contributor in money to the funds.

Of Dr. Swayne's personal characteristics as friend, colleague and doctor it would be impossible to speak too highly. In all the relations of life he was all that could be desired—a scholar and a gentleman in the best sense, a most loyal and amiable colleague; by nature he was simple and kindly, the least aggressive of men, and essentially a man of peace; he never appeared to be striving after fame or popularity or working for effect, but strong in the quiet consciousness of power in his own professional sphere, he had no necessity for self assertion, his abilities being recognised and appreciated by all his professional brethren who during his long life were brought into contact with him.

There are few men among us in this neighbourhood who have been engaged in midwifery who have not at one time or another sought his valuable assistance in cases of difficulty; he enjoyed in a remarkable degree the confidence and esteem of all who knew him.

He died painlessly and suddenly in his eighty-third year, "full of days, riches and honour."

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ROUND THE WORLD.[1]

A MEDICAL TRAVELLER'S NOTES.

BY

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THE British visitor to Australasia is immediately struck with the identity in all outward features of what is called "civilised life" in different parts of the world. Melbourne presents the

[1] Continuation of "Therapeutics of a Sea Voyage," March 1903, p. 1.

same imposing public buildings, massive offices, brilliant shops, blazing advertisements and irrational habits in dress to which we are accustomed at home. The business man goes to the city in torrid midsummer wearing a black coat and hat, as if it were sacrilege to consult his comfort and defy convention. These respectable cloth-covered backs often carry the addition of thousands of sessile flies; for the flies and the dust are the two *bêtes noirs* of Melbourne. It is difficult to believe that that great city with its 460,000 inhabitants, its magnificent streets and churches, its beautiful suburban gardens and dwelling-houses, was sixty-six years ago a mere hamlet of wooden bungalows inhabited by about 100 settlers. Such large urban populations in the colonies do not imply as in old countries overcrowded slums, filth, and moral and physical degeneracy. Melbourne covers an area of 254 square miles, and less than a sixth of the population live in the actual city; the others live in the suburbs, but everywhere is space, light and air. The poorest have something better than a mere "living wage," and society is far less strictly divided into layers than at home. A low death-rate corresponds with the better conditions of life.

Sydney, the capital of New South Wales, nearly equals Melbourne in population with its 430,000 inhabitants. An older city (it had its small and tardy beginnings in 1788), it was laid out less regularly than the capital of Victoria, and its streets have not that lavish breadth or mathematical straightness which characterise the more modern city. In the element of the picturesque, however, there can be no comparison. The beauty of Sydney Harbour has not been exaggerated. This blue inland sea, with its numerous bays and inlets, each deep enough to float the largest ships, and exquisitely wooded to the water's edge, is the pride of every citizen and the delight of every traveller. Sydney has two admirably appointed general hospitals, the Sydney and the Prince Alfred, and a flourishing medical school. When I was there in May of last year, the Public Health authorities were contending with bubonic plague. The principal medical officer of the State, Dr. Ashburton Thompson, and the able head of the Public Health Laboratory, Dr. Tidswell, kindly gave me access to

the latter, and also to their reports on the disease and its propagation. They also introduced me to the Medical Superintendent of the "Coast Hospital" for infectious diseases. This last deserves special mention. It consists of an area of land several square miles in extent close to the sea, surrounded by high barriers, containing isolated groups of wooden buildings for the treatment of the different diseases. One group is for lepers, who are taken in for life, and is itself a miniature village. Others are for plague, scarlatina, small-pox, diphtheria, etc. It is eight miles from the city, being reached by a steam tramway. The buildings are on wild prairie ground sloping to the shore, and convalescents can live in the open air, and enjoy sea-bathing and rambling. In so large a space isolation is easily carried out, and the conditions are most favourable for recovery. If one or more wards become profoundly infected, they can be taken to pieces and burned, and new ones can be erected. Here is one great advantage of a country where land is cheap, and ample for municipal purposes. All the cases of plague in the wards at the time of my visit were mild and doing well, the bubos having been opened and dressed with iodoform gauze. One autopsy I saw at the General Hospital—a Chinaman, who had died twenty-four hours after infection, an extremely septic case. Here it may be mentioned that the Chinese, who have to pay a poll-tax of £100 to enter Australia, and are hated by white labourers for the small pay they are willing to accept and their extraordinary economy in living, are, according to the ward sisters of the General Hospital, excellent patients—docile, cleanly and obliging.

A day was advantageously spent in the pathological museum of Sydney University, and another morning I was invited by Mr. MacCormick, of the Prince Alfred Hospital, one of the ablest surgeons in Australasia, to attend some operations. He performed five major operations, including removal of an upper-jaw, and of a sarcoma of the anterior triangle, between the hours of 8 a.m. and 1 p.m., with admirable dexterity, and without the slightest sign of fatigue. In the equipment of the theatre no aseptic appliance was wanting. Here let me

mention the exceeding kindness extended to a professional brother by all colonial medical men.

Though I have referred to Sydney at this point, I did not go there immediately from Melbourne, but sailed first from Melbourne to Dunedin, a voyage of about 1,520 miles. I passed rather rapidly through New Zealand from south to north, arriving at Auckland after five weeks of walking, coaching and sailing in that most beautiful country. Nothing of much interest from a medical standpoint came in my way. The University of New Zealand, which examines and grants degrees, consists of the three colleges of Dunedin, Christchurch and Auckland. The medical school of the country is connected with the Dunedin College. Of the hospitals of New Zealand, forty-three in number, one half are incorporated institutions under the government of trustees; the other half are managed by elective "Hospital District Boards," who have also to contribute to the maintenance of the incorporated hospitals. They are supported (1) by voluntary subscriptions and bequests, (2) by rents and profits from lands vested in the boards, (3) by payments from patients, (4) by contributions from local authorities, and (5) by Government. The last item averages two-fifths of the whole, the voluntary contributions being about one-twelfth of the whole. Whether this system of State control works entirely well I am unable to say.

The death-rate of New Zealand is very low in comparison with that of European countries. It was 9.43 per 1,000 in the year 1900, that of Great Britain being 18.4, of France 21.1, of Germany 21.5, and of Austria 25.4. In the Australian Commonwealth, including Tasmania, it was in 1899 12.85. The deaths from phthisis in New Zealand in 1900 were 7.56 per 10,000. In England and Wales the lowest rate for many years was reached in 1896, when it was 13.07. Seeing that many sufferers from phthisis go to New Zealand yearly for their health, the death-rate shows how favourable that country is as a place of residence for phthisical patients. I observed posted up at every railway station, post-office, and public place, a clearly expressed, concise notice, regarding the genesis and prevention of tuberculosis, issued by the Government Public

Health authority, and calling on the public to assist the State and the medical profession in stamping out the disease. It was printed in such type as to arrest the attention of any one who had his eyes open. Why should not the same sensible measure be adopted by our Local Government Board? We have endless advertisements of quack remedies on every hoarding, but that which really affects the well-being of mankind is left undone. A government of socialistic type is not without its advantages. In New Zealand the railways are the property of the State, which can use its advertisement spaces as it will.

The climate of New Zealand is more equable than that of Great Britain, the mean for the whole colony being in spring 55° F., in summer 63°, in autumn 57°, and in winter 48°. London is 7° colder than the north, and 4° than the south island. There is an immense difference in the rain fall between the western and eastern coasts. In the south island the great longitudinal chain of the Southern Alps, parallel with the west coast, precipitate the rain on that coast to an extent five times greater than on the east. The eastern districts are the driest, the great Canterbury Plain ending at Christchurch in the south island, and the vicinity of Napier in the north island, being almost ideal in climate as well as productiveness.

This is hardly the place to dwell on the magnificence of the scenery, or the wonderful flora and fauna of New Zealand, which are a perpetual source of interest and surprise. Switzerland, England and Scotland are all to be found there. The Southern Alps have an average height of 8,000 feet, the highest, Mount Cook, reaching 12,349 feet. A large proportion of these mountains is still unexplored. The inland lakes and the coast fiords or "sounds" are majestic.

The hot springs of the north island are found over an area of comparatively recent volcanic action, extending from north to south a distance of 300 miles. There are about seventy well-known medicinal springs — saline, alkaline, silicious, sulphurous, and acid, but not chalybeate, besides many remarkable geysers and other phenomena of great interest. Rotorua is the centre for these, and most of the European medicinal baths have their counterparts there. The visit of

the Prince and Princess of Wales to that district had the good effect of stimulating the local authorities to the improvement of the appointments of these baths.

From Auckland I visited the Tongan, Samoan and Fijian groups of the Polynesian Archipelago, a novel and charming experience. In Tonga Tabu, the principal of the "Friendly Islands," Dr. McLennan, the only European medical man, was most hospitable. The greatest difficulties of his practice, he said, were the native habit of consulting Tongan "medicine men" and dosing themselves with poisonous concoctions, and, secondly, the impossibility of obtaining milk. There are no cattle on the islands, and if there were, the natives would prefer the milk of the green cocoanut to which they are used.

The national diet consists of bread-fruit, taro, yam, banana, with occasional indulgence in roast pig or fish. With Dr. McLennan I paid a professional visit to the young Queen of Tonga, who seemed to be suffering from tuberculosis of the peritoneum: she died a few months afterwards. The physical development of the Tongan race is an argument for vegetarianism. More magnificent men than these tall copper-coloured, half-naked denizens of the palm-groves I never saw: they are both handsome in feature and most dignified in carriage, and their musculature would stir the enthusiasm of a sculptor or anatomist.

In all the islands of the South Pacific the *filaria* is a common parasite, and elephantiasis is frequent. In Suva, the capital of Fiji, Dr. Lynch took me over the native hospital, and showed me several cases where elephantiasis scroti of enormous dimensions—weighing sometimes 80 to 90 lbs.—had been successfully removed. The operation is not difficult, and the relief to the patient can be imagined. In Fiji also I saw many instances of yaws (Frambœsia), in every stage of the complaint, fungoid, ulcerative, and "tertiary" (periostitic and destructive).

Sometimes a sucking-child, with typical ulceration of the mouth, had communicated a similar ulcer to the maternal nipple and areola. But the Fijian mothers are quite content: they believe it beneficial to the child to have the disease in infancy, and in most cases an early attack does confer future

immunity. Mr. Jonathan Hutchinson's view, that yaws is a manifestation of lues, is not shared by the profession in Fiji, who are convinced that, though offering many analogies to syphilis, such as that potassium iodide and mercury are specifics for both, it is an entirely separate pathological entity, and is not of venereal origin. Syphilis, indeed, seems to be unknown in Fiji. This is the opinion of Dr. Corney, the highest and most experienced authority in that part of the world.

Samoa, or the "Navigator Islands," lie between 13½° and 14° latitude south of the equator: Fiji is between 15° and 20°: Tonga between 18° and 22°. Thus these island groups lie well within the tropic of Capricorn, and their vegetation is correspondingly luxuriant. From October to May they are visited by tropical rains, so that the climate is both hot and moist. From May to October, the dry season, is the most agreeable. The climate of Fiji, though it has a mean temperature of 80° F., is in the dry months most pleasant, and the scenery, combining rugged red peaks of igneous rock with glorious vegetation, is peculiarly lovely. There is indeed an indescribable fascination about all these islands, with their fringing and barrier-reefs of coral, on which the Pacific billows break, their quiet and many-tinted lagoons, their palms, bread-fruit trees, casuarinas, bananas and other fine trees, their brilliant dracænas and crotons, frangipanni and hibiscus flowers, and the green carpet of the sensitive plant, while the gentle and open manners of the natives are in happy contrast to the more stand-off and self-sufficient habits of intercourse which characterise Anglo-Saxons.

After spending part of March and most of April in the South Seas, I returned to Sydney, and sailed thence for Japan, on the 8th of May. The fine Clyde-built Japanese steamer, *Kumano Maru*, coasted along the east side of Queensland, passed through Torres Straits, by New Guinea, through the Banda Sea, past Celebes and the other Dutch spice Islands, called at Manila in the Philippines, and at Hong Kong, touched at Nagasaki and Kobe on the "inland sea," and finally reached Yokohama, thirty days after leaving Sydney.

I must not leave the subject of Japan without referring to the great kindness of Dr. Miller, of Kobe, and his colleague Dr. Thornycroft.

Space forbids me to enter on the popular subject of Japan, with which it would be easy to fill the *Journal*. I may mention, however, that during a stay of five weeks there I visited several medical schools, and found every modern appliance for the teaching of the medical sciences. Japanese is used as the medium of instruction, but technical terms are generally expressed in German, owing, no doubt, to the fact that so many Japanese students are trained at German medical schools. Most of the medical literature also which I saw was German. This is in contrast with the general custom, which is to use English alongside of Japanese for all official notices, such as those at post-offices and railway stations, and often for unofficial advertisements.

Japan is volcanic in origin, and earthquakes are common. This also accounts for the numerous hot springs and *solfataras* scattered throughout the country. Bathing is a passion with the Japanese: they are accustomed to use water at a much higher temperature than we should—110° to 120° F.; but these very hot baths do not weaken or cause re-action, and are found to be most refreshing after a long day's walking or riding. A very curious sight is the Spa Kusatsu, a town 3,800 feet above sea-level, which contains a leper settlement, and is also largely resorted to for the treatment of syphilis, rheumatism, and gout. I called on the resident doctor, but found he knew neither English nor German. He, however, escorted us through the place, and my guide interpreted. He took us to the chief public bath, where about twenty-five men systematically bathe in scalding water containing 3.176 per cent. of sulphuric acid, 6.476 per cent. of alum, and traces of arsenic and sodium. They go through this penance at 5 a.m., 9 a.m., 2 p.m. and 5 p.m., and are summoned at these hours by the blowing of a horn. The water being from 113° to 128° F., they first spend a quarter of an hour in splashing it up with long boards to a rhythmic chant, partly to cool it, partly to get into a perspiration; they then baste their heads a hundred times with wooden

ladles, while they kneel round the edges of the tank. At a given moment the bath-master shouts "In"! and they descend screwing up their faces with pain, till they are immersed up to the chin. The bath-master calls—"One minute," and they respond with a hoarse cheer; "two minutes," "three minutes," and "Out!" They crawl out, red and half-boiled, and then dress and leave, to go through it all again in four hours. The doctor informed me that he had never seen any benefit to leprosy from these baths, but the lepers had unconquerable faith in them. The patients whom I saw in the public bath seemed for the most part to have rupia or macular syphilides. It is difficult to see how so irritating a method of treatment could be of service in these cases.

Leaving Yokohama on 15th July, I crossed the Pacific *via* Honolulu, and was in San Francisco on the 30th. The climate of Los Angeles and San Diego, at the southern extremity of California, is almost ideally perfect, for though the sun is intensely strong, the atmosphere is remarkably dry, and a cool refreshing breeze blows in continually from the ocean. The great central fruit-growing districts of California are very trying in summer from the fierceness of the sun's rays, unmodified by the influence of the sea, and fruit-growers there are often glad to take flight in midsummer to Santa Catalina or Los Angeles.

After some weeks in California I returned to San Francisco, thence by rail to Vancouver, and crossed the Rockies and Selkirks, by the Canadian Pacific Railway, which I left at Fort William, to steam down Lake Superior and Huron. I spent some time with friends in Nova Scotia, and returned to England *via* New York and Liverpool, the whole voyage from Plymouth round the world to Liverpool having occupied exactly a year and five days.

A CONTRIBUTION TO THE CONSERVATIVE SURGERY OF THE UTERINE APPENDAGES.

BY

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To find it necessary to sacrifice healthy organs in order to effectually rid the patient of diseased ones must always be a matter of regret, and nothing can be more distasteful to the surgeon. Necessity knows no law, but wherever it is possible to conserve normal tissues the desirability of so doing needs little argument.

The modern treatment of compound fractures, myeloid sarcoma of the long bones, tuberculous joint disease, hammer-toe, and many other conditions, bears witness to the great advance which conservative surgery has made in dealing with many parts of the body; but the appreciation of what conservatism may do in affections of the uterine appendages is dawning more slowly.

The slavish adherence to an old-fashioned operative technique is largely responsible for the want of progress in that branch of pelvic surgery which forms the subject of this paper. It is still customary with many operators in dealing with tumours of the broad ligaments to regard salpingo-oöphorectomy as necessary for the removal of these conditions, with the result that normal tubes and ovaries are frequently—and quite needlessly—sacrificed.

Apart from the fact that it should be the highest aim of surgery to remove only diseased structures, it is not difficult to find good reasons for conservatism in regard to healthy Fallopian tubes and ovaries.

The distressing phenomena which so frequently accompany a menopause artificially induced, the mental effect on younger

women of the knowledge that they have been "unsexed," and the possibility of conception if a wise conservatism has been followed, should all be borne in mind.

Moreover, there is a widespread belief that the ovaries produce an internal secretion necessary to the physiological well-being of the individual—a function analogous to that of the thyroid and other glands—and experiment has shown how greatly the metabolism of the body is affected by the loss of the ovaries. These ideas are supported by the clinical phenomena following castration, to which reference has just been made; and though conception is no longer possible after the final cessation of menstruation, it is still desirable to avoid the unnecessary sacrifice of the ovaries after the menopause, for it has not been shown that this function of internal secretion is even then in abeyance.

Much has already been accomplished in preserving healthy structures. Formerly it was the custom in cases of a diseased ovary of one side to remove the other (normal) ovary, lest the same disease should recur in it; now it is only in cases of sarcoma, carcinoma, and papilloma, where the opposite ovary is suspicious, that such a course would be countenanced. The removal of small "cystic ovaries" is now regarded by the best observers as unscientific and unjustifiable; adherent ovaries and tubes are simply released from their adhesions; the tube may be preserved in extra-uterine pregnancy, and ovaries affected with cysts of the corpus luteum are no longer sacrificed.

These facts, though not as well known as they should be, are well established, and there is no need to dwell on them; the points I desire to emphasize are connected with the removal of tumours of the broad ligament. It is in the manner of dealing with these growths that there is so much need of further knowledge and improvement, for their encapsulation has not been fully appreciated. We should have a smaller number of "incomplete ovariotomies" and of hysterectomies for "fibroma" of the broad ligament if the existence of a definite capsule was rightly understood.

I am not referring to those cases of uterine myo-fibromata

and ovarian adeno-cystomata, which burrow into the layers of the broad ligament as a secondary development. These are fairly common, and in them conservatism is not usually possible. My remarks are limited to cysts and fibromata—or myo-fibromata—originating in the broad ligament itself.

It is desirable to consider exactly what is meant by the "capsule" which exists in these cases, but to prevent confusion reference must first be made to a "false capsule" which is not uncommonly found associated with ovarian tumours. This latter consists of adherent mesentery or omentum, or of inflammatory deposit. It is simply treated as an adhesion, and requires no further mention. The real capsules are provided primarily by the broad ligament, and to accurately grasp their anatomical arrangement we must understand the structure of the uterine appendages.

Above the level of the ovary the two layers of the broad ligament form a mesentery for the Fallopian tube (which is situated at the top of this portion of the broad ligament), and is known as the mesosalpinx. It is in this portion that cysts are found, whether they originate primarily in the broad ligament or burrow into it secondarily from the ovary. It contains the parovarium, and cysts arising in this structure form the commonest tumours enclosed in a capsule derived from the mesosalpinx.

Below the level of the ovary the two layers of the broad ligament are more widely separated, and here constitute the mesometrium. It is in this part of the broad ligament that fibromata or myo-fibromata will be found, whether they have developed *in situ* or represent a part of a myo-fibroma spreading out from the uterus. It is from the mesometrium that the capsule is derived in tumours of the lower part of the broad ligament.

The cellular tissue of the mesometrium is continuous with the retro-peritoneal connective tissue, so that large tumours can burrow extensively behind the peritoneum, which then constitutes a part of the containing capsule. Cysts originating in the mesosalpinx may invade the mesometrium and then burrow widely in the retro-peritoneal tissue as in one of the cases cited below (Case 3).

In addition to connective tissue, involuntary muscular fibres have been demonstrated in the mesometrium, so that there is no difficulty in understanding the pathology of the isolated myo-fibromata found encapsuled in this region.

In the process of expansion tumours of the mesosalpinx will be found with the Fallopian tube stretched across the top of the capsule, as in the ordinary parovarian cyst; whereas in tumours encapsuled by the mesometrium the layers of the mesosalpinx will be found to be unaffected on the top of the tumour.

In the right understanding of the various anatomical forms of capsule lies the secret of conservative surgery of the uterine appendages. The capsule is opened and the tumour is shelled out of its connective tissue bed, and thus ovary and Fallopian tube can be preserved intact. In the larger cysts a preliminary tapping is necessary.

After the enucleation of the tumour the treatment of the capsule is sufficiently simple: if healthy, it may be dropped back into the pelvis with or without sewing up the cut edges of the capsule. There is nothing to fear from the exudation of fluid or blood into the resulting cavity provided all vessels have been properly secured, and there is no need to cut away redundant parts of the capsule, which soon contracts. On the other hand, if the capsule is infiltrated with inflammatory deposits in association with a tumour which has suppurated, it will be wiser in some cases to attach the cut edges of the capsule to the abdominal incision and to drain the cavity. The need for this latter course is, however, extremely infrequent.

These remarks are well illustrated by a series of cases which have recently come under my care.

Case 1. Cyst of Mesosalpinx.—The patient, aged 27 years, had complained of pelvic pain for the past eighteen months. The pain was always worse at the menstrual periods, and during the past five weeks had been so severe as to necessitate the daily use of opium. The abdominal muscles were tense, and the patient indicated the left ovarian region as the site of greatest pain and tenderness. The uterus was normal in size and position. In the left broad ligament was a smooth globular swelling the size of an orange. The tumour allowed of a certain amount of movement, but it always retained the same relation to the uterus, and could not be moved out of the pelvis.

On opening the abdomen in the mid-line the swelling was found to be a smooth-walled, whitish cyst encapsuled in the upper part of the left broad ligament, with the Fallopian tube running over the top of it. The ovary was free. The mesosalpinx was incised over the tumour, which was cut into to allow of the escape of a clear, transparent fluid. The cyst-wall was then completely enucleated from the capsule formed by the mesosalpinx, and the hole in the broad ligament was closed with a few silk ligatures. No vessels were tied, and the ovary and Fallopian tube were preserved intact, except that a few small oöphoritic cysts were incised. The parietal wound was closed with silkworm gut, and the patient made an uninterrupted recovery.

Case 2. Myo-fibroma of the Mesometrium.—The patient, aged 34 years, had suffered from vaginal tenesmus and a sense of "weakness" for six years. For the past eighteen months sickness and pain had occurred at the menstrual periods. Three months ago there had been a very severe attack of hypogastric pain, and she had never been well since.

To the left of the uterus, and independent of it, a firm nodular swelling could be felt running out to the pelvic wall and more or less fixed. The tumour was the size of an egg, and a portion of it projected into Douglas's pouch. Some pain was produced when the tumour was firmly pressed upon. The uterus was normal in size and position. The right ovary was normal, but the left ovary could not be distinguished.

On opening the abdomen in the mid-line the tumour was found to be a myo-fibroma encapsuled in the layers of the mesometrium. The Fallopian tube, supported by an intact mesosalpinx, ran across the top of the tumour.

After incising the broad ligament the tumour was easily enucleated, and the hole in the mesometrium was closed with three silk sutures. Three small oöphoritic cysts in the left ovary were snipped and part of their walls removed, and a blood cyst from a recent Graäfian follicle in the right ovary was similarly treated. Both ovaries and tubes were preserved.

The abdomen was closed and recovery was uneventful. The tumour cut with a fibrous section, and microscopically showed the structure of a myo-fibroma.

Case 3. Cyst commencing in the Mesosalpinx and burrowing into the Mesometrium and behind the Peritoneum.—Three weeks before I saw her the patient, aged 42 years, had noticed a small tumour on the right side of the abdomen. A week later she went for a cycle ride, and afterwards felt very uneasy. Two days after this she was seized with great abdominal pain, chilliness, and retching, and the temperature was 103°. In about five days the pain had ceased and the temperature had come down to normal, but the tumour rapidly increased in size, and she frequently complained of faintness. The abdomen was

distended, more on the right side than the left, by a smooth-walled, globular, fluctuating tumour which reached from the pelvis to half-way between the umbilicus and ensiform cartilage. The uterus was rather fixed, and some small myo-fibromatous nodules were felt in the cervix.

A 4-inch incision was made in the mid-line between the umbilicus and pubes. On separating a good many omental adhesions a cyst with red inflamed walls was disclosed. The tumour involved the right broad ligament, and reached up nearly to the liver by burrowing behind and between the mesentery and mesocolon, so that the intestine was implanted on the cyst and seemed part and parcel of its walls. On tapping the cyst about half a gallon of almost black fluid (altered blood) escaped, together with much soft, brownish fibrin loosely adherent to the walls of the cyst.

At first it appeared impossible to remove the cyst-wall, but the lower part was found to be closely applied to the uterus and to have originated in the broad ligament. The peritoneum and capsule of broad ligament were therefore divided over the tumour, and the whole cyst-wall was then, with some difficulty, completely enucleated from its bed. In doing this it was necessary to tie off many vessels and adhesions, but the ovary and tube were preserved intact. The cyst-wall was one-third of an inch thick and much inflamed. The abdomen was completely closed, and the patient made a rapid recovery.

This last was an extremely complicated case, and well illustrates the extensive retro-peritoneal burrowing of which many of these tumours are capable. Like the simple cyst in Case 1, it probably originated in the parovarium, but other cysts are found in the broad ligament, which appear to be of inflammatory or lymphatic origin,[1] and in such cases are frequently bilateral.

These inflammatory cysts are exemplified by two cases, which I will only briefly describe as the details have been published before.

Case 4.[2] **Multiple Intra-ligamentary Cysts.**—The patient, aged 29 years, had suffered from tuberculous peritonitis. After detaching some omental adhesions a cyst was found encapsuled in the right mesosalpinx. The capsule was divided over the cyst (which contained 6 ounces of a turbid greenish yellow fluid with cholesterin cystals in it), and this with three other cysts was enucleated from the right broad ligament. The

[1] See note at end of paper.

[2] "A Retrospect of a Third Series of Fifty Consecutive Intra-abdominal Operations," *Bristol M.-Chir. J.*, 1901, xix. 121.

enucleation left a cavity the size of a cricket ball, behind which the right Fallopian tube and ovary could be felt embedded in dense inflammatory tissue. A cyst as large as a pigeon's egg, and containing clear fluid, was enucleated from the left broad ligament in a manner similar to the removal of the cysts from the right broad ligament.

Case 5.[1] **Multiple Intra-ligamentary Cysts.**—The patient, aged 42 years, had two attacks of what appeared to be severe pelvic cellulitis, one of which nearly cost her her life, in the twelve months preceding operation. On opening the abdomen numerous and dense adhesions were found matting the appendix, uterus, and ovaries to the parietes. The vermiform appendix, which was diseased, was removed, and several cysts were enucleated from the right broad ligament. On the left side the ovary, Fallopian tube, and some broad ligament cysts were so densely matted that the mass was tied off and removed after it had been, with much difficulty, isolated from the dense adhesions surrounding it.

This last case was one of very great complexity and difficulty, and it is the only one in which a tube and ovary had to be sacrificed.

It is possible, too, that in larger myo-fibromata of the broad ligament than that mentioned in Case 2, the hemorrhage attending a rapid enucleation might be so severe as to endanger the patient's life. Under such circumstances it would be wiser to tie the ovarian and uterine vessels and the round ligament, and sacrifice the tube and ovary rather than run any great risk from hemorrhage.

Each case must be judged on its merits, but enough has been said to show how much can be done by enucleating cysts and solid tumours, and so preserving all normal structures.

Even where it is impossible to save the ovary and tube, a knowledge of the encapsulation which exists in broad ligament tumours is most valuable in the successful and rapid completion of the operation. Of such cases I could quote many examples, but it would be beside the purpose of the present subject.

In conclusion, a word may be said on the diagnosis of broad ligament tumours. They are fixed, more or less closely applied to the side of the uterus, and sessile because of their being

[1] "A Retrospect of a Further Series of Intra-abdominal Operations," *Bristol M.-Chir. J.*, 1902, xx. 33.

enclosed between the layers of the broad ligament. The myo-fibromata of the broad ligament occur at an earlier age than uterine myo-fibromata would be likely to be found burrowing into the mesometrium; and from ovarian myo-fibromata or fibromata they are distinguished easily by the pedunculation and mobility which the latter tumours always present.

[Since writing the above, I have had a further case of double multiple broad ligament cysts, which throws some light on the pathology of some of these cases. The walls of the cysts contained a large quantity of unstriped muscle, and the inner surface was lined with columnar epithelium—forming papillomata in one instance. Their situation in the broad ligament, and the absence of ovarian tissue in the wall which contained so much muscular fibre, suggest that the cysts probably arose in some tubular structure, such as Gärtner's duct.—J. S.]

A CASE OF PERFORATED DUODENAL ULCER, WITH REMARKS.

BY

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C. F., aged 33, was admitted to the Bristol Royal Infirmary at one o'clock a.m. on January 14th, 1903.

He had suffered for several years from abdominal pain, never very severe, usually between meals (not immediately after food), and during the night. The pain was ill-defined, but generally more on the right than the left side, and usually relieved by a little whisky. He has never had jaundice or urinary trouble, neither has he suffered from sickness, hæmatemesis or melæna.

He passed the day of January 13th in his accustomed health; he ate nothing out of the way except a little German sausage. As he was going upstairs to bed at eleven o'clock he was seized with a violent pain in the right side of the abdomen. This got worse, and he walked with difficulty to the Infirmary.

On admission he was moderately collapsed, contorted with pain, the abdomen was rigid and tender, pulse 84, respiration 20. The pain was paroxysmal, returning every few minutes.

There was no very obvious distension, and liver dulness was present. The most tender spot was over the region of the appendix.

At 2 a.m. he was put under ether, and I opened the abdomen in the middle line below the umbilicus. The peritoneal cavity contained turbid, yellowish green fluid without fæcal odour. The appendix was normal. I then opened above the umbilicus and explored the stomach. Here the evidences of peritonitis were more marked, and before long a circular ulcer, 3–5 mm. in diameter, was found on the anterior surface of the first part of the duodenum, about an inch from the pylorus. To obtain better access to the part the right rectus muscle was divided transversely. The ulcer was closed with silk sutures (Lembert) and the peritoneal cavity well cleansed with sponges through both incisions. A gauze drain was inserted into the upper and a rubber tube into the lower wound. The muscles were sewn up with catgut.

His condition during the day was favourable, but there was considerable pain, necessitating morphia injections. He was fed rectally.

On the 15th there was slight jaundice. He vomited dark blood occasionally; pulse improved.

On the 16th the jaundice was deeper. During the night he had violent hiccough; his pulse went up to 160 and he became collapsed, but soon rallied. The bowels were freely evacuated by a rectal wash.

After this he got on very well; the drains were removed on the 21st, the stitches on the 28th. He was allowed "albumin water" and peptonized milk by the mouth on the 16th, and minced chicken on the 29th.

On the 30th he had a sudden attack of very severe pain with alarming collapse; but this was soon relieved by a small hypodermic of morphia and hot fomentations.

His subsequent recovery was uneventful.

The first successful operation for perforated duodenal ulcer was, apparently, performed by Mr. Percy Dean in February, 1894.[1] Without operation the diagnosis is bound to be uncertain. The uncertainty lies between perforation of a gastric or duodenal ulcer, or appendicitis especially. Mr. Bolton[2] has pointed out the occasional close resemblance to appendicitis; and it is interesting that when the House Surgeon at the Infirmary summoned me to this case he remarked that he thought it was "appendicitis or duodenal ulcer."

Before perforation the diagnosis is also obscure; the main

[1] *Lancet*, 1894, i. 1191. [2] *Med. Rec.*, 1900, lvii. 494, 522.

points which indicate the duodenum rather than stomach are:—(1) Vomiting is not so common, neither is hæmatemesis; (2) duodenal ulcer is more common in males (3-1): gastric is much more frequent in females; (3) Tarry stools are more common; (4) The pain is apt to be in the right hypochondrium, an hour or two after meals (not soon after), and not immediately increased by food; (5) The average age for duodenal ulcer is 31.3 (average of 72 cases), and therefore rather later than the common age for gastric ulcer.

As to the operation. These ulcers are generally situated on the first part of the duodenum, and can generally be reached by a mediam incision; but it is a pity to waste time in attempts to draw up the gut, when a cut across the right rectus muscle makes it so much easier. In these and similar cases time is an important element in the operation: the chance of recovery is, I feel convinced, very much diminished by a long operation.

In the after treatment everything depends on careful nursing and feeding. The nourishment for the first few days should be given by the rectum. Sips of water may be taken to relieve thirst, but it should be remembered that thirst is allayed more by absorption from the large intestine than from the stomach.

When feeding by the mouth begins, "albumin water" (made by beating up the white of egg with water) should be the first given, then peptonized milk and gruel, followed at due intervals by pounded chicken, sago, barley water, milk puddings, etc. It should be particularly noted that a free secretion of gastric juice is not desirable, and therefore substances which excite this secretion should be carefully avoided, such as beef essences, gelatine, and all kinds of condiments and extractives. Probably no food is so dangerous in the early treatment after perforated gastric and duodenal ulcers as patent beef extracts and essences. Milk is one of the safest foods; but the toughness of the clot should be prevented by peptonization, or the addition of barley water, lime water, or soda water, etc. Fish is frequently given as a digestible and unirritating food; but it is certain that some kinds of fish stay in the stomach and duodenum for several hours, especially fat fish and cod. Whiting appears to leave the stomach the soonest.

THE ANTIBODIES IN DISEASE.[1]

BY

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ALMOST every current number of the medical journals contain a reference to the subject of my paper, and perhaps illustrates the difficulty that exists in dealing with the antibodies and immunity in the space of twenty minutes, which custom places as our time limit.

From an etymological standpoint I owe you an apology for the use of the weird word "antibody"; but at the same time I know of no other which so clearly expresses the characteristics of these substances; *e.g.*, "antidote" implies something given or administered, and is unsuitable therefore.

The nomenclature is undoubtedly confusing, and I must ask your indulgence for the multiplicity of names given to the same bodies, which I will limit as far as possible.

As the subject is of growing importance to the practice of medicine and the treatment and the understanding of disease processes, it is of interest, I think, to us all. Its origin in the work of Jenner, Hunter, and Pasteur is now a part of medical history. Twelve years ago immunity was explained in three ways. Metchnikoff, a Russian biologist, working in Paris, maintained that leucocytes ingested and digested virulent bacteria in the successful resistance to an invasion of the animal tissues.

Nuttall and Buchner, in 1888, discovered the bactericidal action of the blood, and the two theories were known as the cellular and humoral.

Others, as Hankin, believed in a cellulo-humoral theory, or combination of the two, and all evenly-balanced minds will accept at the present day this explanation. Indeed, Metchnikoff

[1] Read at a Meeting of the South-Western Branch of the British Medical Association at Exeter, April 1st, 1903.

has now ingeniously adapted his cellular theory to the humoral one (so lucidly set forth of late by Ehrlich); and Kanthack some years ago showed that protective substances, or alexins, existed in the eosinophil granules of leucocytes. In 1891 Behring discovered the antitoxins of diphtheria. He found that the *serum* of animals which had been "hyper-vaccinated," or immunised against diphtheria by previous injections of diphtheria bacilli, or their toxins, had the power of protecting other animals against diphtheria, when injected into them.

Pfeiffer discovered the lysins or dissolvers of bacteria in 1894. He injected cholera spirilla into the peritoneal cavity of a guinea-pig which had been vaccinated or immunised against cholera, and withdrew a little of the culture at short intervals. The organisms became granular, then rounded, and finally disappeared entirely, and the animal survived. This experiment, known as "Pfeiffer's phenomenon," is a process of digestion, and explains bacteriolysis, and also the successful resistance to the invasion of the bacteria of the disease in question afforded to animals or persons treated with immune sera.

This led to the investigation of the action of sera of animals, immunised against foreign *cells* by their injection, upon these cells; *e.g.*, rabbit's serum immunised against fowl's corpuscles dissolves fowl's corpuscles; and analagous results were obtained by Bordet, Metchnikoff, Morgenroth, and Ehrlich who demonstrated the nature of this process, or hæmolysis.

Metchnikoff amplified Pfeiffer's phenomenon by obtaining it in vitro; mixing immune serum, peritoneal exudate and bacteria, and obtaining bacteriolysis. Bordet showed that peritoneal exudate could be replaced by normal serum and similar results obtained, and also that a little fresh serum would renew the activity of the immune serum, or "reactivate" it, if it were at all lessened.

Thus was shadowed out the co-operation of two substances in the process of bacteriolysis. A further step forward was then made. Bordet proved that heating the immune serum to 65° C. did not affect its bacteriolytic powers, though it still needed the addition of normal serum. Heating the latter to 55° C., however, prevented solution of bacteria. It was concluded,

therefore, that the immune serum contained a stable substance of specific "anti-"nature, and that normal serum contained a labile substance acting as a complement.

Metchnikoff states that the large mononuclear cells or macrophages, and the polymorphonuclear or microphages contain this complement or cytase. Histology shows us that the former cells are associated with resistance to the bacteria of chronic diseases, such as tubercle and leprosy, and to malarial and other parasites, and also to animal cells, as red blood cells; while the latter are of course associated with acute bacterial infections. He considers that these leucocytes secrete a cytase or dissolving ferment, and in an immune animal a special body (fixateur) sensitises the foreign cell to the action of the cytase or complement.

We have now arrived at the stage when two great groups of antagonistic bodies had been separated. (1) *The antitoxins*, which combine with and neutralise toxins; (2) *The lysins*, which act by the co-operation of two bodies, and can digest or dissolve cells in the presence of suitable substances (alexins).

Add to these two great groups two lesser ones, the agglutinins and the precipitins or coagulins, and the list is fairly complete.

The *agglutinins* have the power of clumping those bacteria or cells, the previous injection of which led to their formation; and the *precipitins* similarly form insoluble compounds with the proteids which led to their production.

The *agglutinins* were demonstrated in 1889, when Charrin and Roger observed that b. pyocyaneus, grown in the serum of an immunised animal, formed a deposit at the foot of the tube. Grüber and Durham, in 1896, when investigating Pfeiffer's reaction, observed a similar phenomenon, which Widal reversed and applied to the recognition of disease (typhoid).

The reaction of agglutinins is also seen when one animal's cells are injected into another; *e.g.*, the serum of a rabbit, treated with fowl's corpuscles, clumps fowl's corpuscles (in the absence of alexins).

Precipitins were observed in 1899, when Tchistovitch immunised an animal against eel's serum, which is poisonous, and

then found that this animal's serum could give a precipitin with eel's serum. Similarly, goat's serum immunised against horse's serum will give a precipitin with horse's serum.

These results harmonise with the biological test used by Nuttall, Wassermann, and Walter Myers to determine the source of a blood. The blood reacts always with the specific precipitins.

A brief account of the *toxins* is perhaps requisite before dealing with antitoxins. Brieger first isolated from cultures of bacteria certain nitrogen containing bodies, which he called ptomaines; certain similar bodies occurring from metabolic processes in the body being known as leucomaines. But it was remarked that ptomaines never reproduced the symptoms of disease associated with the bacteria from which they were obtained (with the exception perhaps of tetanus).

Roux and Yersin marked a new step by obtaining from a culture of tetanus, filtered through unglazed porcelain, a fluid or toxin which reproduced the symptoms of tetanus. This fluid was sensitive to light and heat; was precipitated by alcohol, and was named toxalbumin. Subsequently, toxalbumoses were obtained from B. tetanus, typhosus, cholera-vibrio and staphylococcus pyogenes aureus.

Toxins are known as intra- and extra-cellular. Thus dead t. b. are very toxic; the new tuberculin T R is their expressed juice. Dead cholera and typhoid bacilli are also most toxic. If cultures of t. b. or b. mallei are boiled, a fever-producing substance may be obtained, such as "old" tuberculin, or mallein.

Professor Sidney Martin was the first to prove that diphtheria bacilli, grown in albumin, produced albumoses, peptones, organic acids and salts with various poisonous actions. He also found toxalbumoses in anthrax, ulcerative endocarditis and tetanus. The chemical nature of toxins is still uncertain, and varies markedly. They can be "salted out" fractionally from the various proteids of immune serum. The virulence of an infinitesimal dose is sometimes extraordinary, and reminds one of a ferment. Quite similar vegetable and animal poisons exist, viz., ricin, abrin, rabin, and venin. All toxins possess two characteristics, viz., they produce poisonous symptoms and combine with antitoxin.

Professor W. H. Welch, in his Huxley lecture,[1] makes the interesting suggestion that bacteria produce toxins as an antibody to the animal cell, just as the animal cell manufactures antibodies to the bacterium; on the ground that action and reaction are equal. By far the most valuable observations as to the constitution of toxins, and explanation of their combination with antitoxins, is that afforded by Ehrlich's side-chain theory.

During the difficult process of attempting to standardise diphtheria toxin, certain anomalous results were obtained. I venture to remind you first that the U of T has been defined as the smallest amount of T which kills a guinea-pig of 250 gms. weight in four days; it is also known as the M L D. Also that the U of A has been arbitrarily fixed as the amount which exactly neutralises 100 U of T. A "normal" unit of A is one in which 1 c.c. contains 1 unit.

Ehrlich took a U of A serum (able to neutralise 100 M L D according to our definition) and added successive quantities of toxin to it. This mixture (in which a U of A exactly neutralised a certain amount of T, when injected into a guinea pig) he called the L O dose. On adding a lethal dose of T to this, you might well expect that the guinea pig would die in four days, but it does not do so—though œdema and paralysis may occur. The exact amount of T necessary to produce a lethal effect in four days he called the L + dose, (sometimes = 28 M L D.

Ehrlich found then (*a*) That of various T a quantity containing less than 100 lethal doses often neutralised the U of A, though on the other hand it might contain even more, yet neutralise one unit only, *e.g.*, 20 or 130 M L doses respectively; (*b*) That the excess of toxin required to be added to the neutral mixture to produce a lethal effect was more than one lethal dose. (*c*) That if you keep a sample of T, its lethal dose might be reduced, say, to one-third, whereas its L O or neutralising dose remained unaltered (this though the A had undergone no change). The explanation he gives is that there exists a modification of toxin called *toxoid*,

[1] *Johns Hopkins Hosp. Bull.*, 1902, xiii. 287.

which is almost without poisonous effect, but which can unite chemically with A. The *toxoids* may be grouped into proto-, syn-, and epi- toxoids, according as their affinity for A is more than equal to or less than T. When the affinity is less than T, the epitoxoid will be set free, and until all of the *toxoids* are set free no *toxin* is said to be set free. You have, therefore, a mixture of A and T, containing possibly toxoids, capable of neutralising one another exactly; on adding a dose of toxin (perhaps containing several lethal doses) the epitoxoids are turned out from their union with antitoxin by the bodies possessing greater affinity for A, thereby enabling more T to be anchored and neutralised, and largely increasing the difference between L O and L + doses. This is the way it presents itself to my mind, and is the best mental picture I can construct.

Toxins may become toxoids by various agencies, and toxoids are capable of producing immunity, and are not very poisonous. It has been shown that the union of toxin and antitoxin occurs in multiple proportions or fixed ratios, and more rapidly in warm solutions; that diphtheria toxin passes through a gelatine film, while its antitoxin cannot do so; yet the filtrate of a mixture is not toxic, or but little so; and, finally, that tetanus toxin and emulsion of the central nervous system is practically inactive.

All these facts prove that the union of T and A and T and body cell is chemical, and Ehrlich puts forward a side chain theory, borrowed from organic chemistry, to account for their combination. The ultimate molecule of T has two affinities or side chains, one known as the haptophorous and the other as the toxophorous. On the latter the poisonous action of the toxin depends. When circulating in the blood the T finds a side chain, which fits its haptophore group and unites with it. If it is fixed to a body cell its poisonous group now comes into play, and possibly, like a ferment, begins to digest the very cell, which was seeking food perhaps! When, however, the T meets, as in A, with a suitable side chain, it is neutralised thereby.

On this reasoning both the poisonous actions of the T and the neutralising action of A depend upon the use of

a probable physiological function by pathological substances. The function in question is that concerned in the assimilation of proteid food, according to Ehrlich; and without this potentiality poisoning by toxins, etc., could *not* occur. Nevertheless, out of evil may come good, for the T may stimulate the body cells to such an extent that they throw off these side chains, which pass into the blood as A. The A have one side chain, but the cytolysins have two, as also the agglutinins. On these grounds we should expect, as antibodies exist in the body preformed, that they might be found adrift sometimes in normal blood, and this is the case.

I quote to you two examples from the last Huxley lecture of Professor W. H. Welch[1] of the application of this interesting theory. The blood in infancy and adult life varies with health, nutrition, alcohol, inanition, pain, and disease as to its antibody constituents, especially its alexins. The infant comes into the world with a less amount of protective antibodies in the blood than the healthy adult, but they are supplied by the maternal milk. This explains at the same time, the greater freedom of the suckling from infectious disease, and, to my mind, also the high infant mortality among bottle or hand-fed infants. Again, in chronic diseases of the heart, blood-vessels, and kidneys, the frequency of terminal bacterial infections is explained by the known diminution of antibodies.

It appears to me not to be impossible that this theory might be extended to explain the immunity that exists in habitual opium eaters to the drug, and to morphia, to arsenic, to alcohol, and even to the ingestion of impurities in air, food, and water by some individuals with apparent impunity. There is no doubt of the affinity of these poisons for certain tissue cells, and in proportion to their absorption, such combination would presumably occur; but their toxic powers are obviously greatly lessened in the cases I have mentioned, without a diminution in their poisonous chemical properties.

How does this occur? Are antibodies produced and circulating in the blood of those who habitually consume with impunity enormous doses of opium, arsenic, or alcohol?

[1] *Loc. cit.*

Is it unreasonable to expect that the haptophore groups of such metallic, alkaloidal, or organic substances might overstimulate the tissue cells to produce anti-metallic or anti-alkaloidal bodies? I submit that experiments on this point might furnish useful knowledge one way or another, especially to chemical pathologists.

For my own part, I am so convinced also of the important part played by the mind and nervous system on the body and disease, in predisposing to attack, that I should expect a complete theory to explain its relations.

I may recall to you that immunity may be natural or acquired (artificial), and that artificial immunity may be active or passive. Active immunity against diseases may be brought about by the direct injection of *organisms or their toxins*. Passive immunity by the injection of the *serum* of a *highly* immunised animal into another, its effect being antitoxic or antibacterial, agglutinating or precipitating.

Among the important practical applications of the principles of active immunity are:—

(*a*) The protective inoculation of sheep and oxen against anthrax (Pasteur).

(*b*) Vaccination against small-pox (Jenner).

(*c*) Anti-cholera inoculation (Haffkin).

(*d*) Anti-plague inoculation (Haffkin).

(*e*) Anti-typhoid inoculation (Wright and Semple).

(*f*) Inoculation against hydrophobia (Pasteur).

Of these, the value of *b* and *f* may be said to be fully established.

Among the important applications of *passive immunity* are the use of *antitoxic* sera of diphtheria, tetanus, snake-poison, ricin, abrin, and, lately, cholera; while the antibacterial or cytolytic sera have been used in typhoid, cholera, bubonic plague, b. coli communis, pneumococcus, streptococcus and other infections.

To reiterate, you know that the serum of an animal *A* treated by repeated injections of toxin may protect an animal *B* against a certain amount of this toxin, when injected with, shortly before, or after it. The serum of A neutralises the toxin, and is called antitoxic.

The *preparation* of such sera is familiar to most of us from business advertisements. They are, briefly, the preparation of a powerful toxin, its standardisation, the production of antitoxin by injection of the toxin into a suitable animal, and the standardisation of the antitoxin.

To give a familiar example:—

(*a*) For diphtheria toxin the bacilli are grown in alkaline albuminous mediums in shallow flasks, for tetanus the growth is made in glucose, both in a warm atmosphere. It is then filtered through a Chamberland filter. (*b*) The strength of the toxin is, for practical reasons, estimated by comparing it with A of known strength, rather than by finding the M L D. (*c*) Antitoxin is usually obtained from horses by injecting them with these toxins, at first subcutaneously, and finally into the jugular vein. After three months' treatment, the dose of 300 c.c. of toxin may be borne by a healthy horse of good resistance. (*d*) "A" must then be standardised. As it has no effect on a healthy body, this is not easy. A certain bulk of it must be examined against a toxin of known strength. As toxin does not keep well, you must first standardise the T against an A of known strength. (Ehrlich uses 1700 I U in 1 gm.) When the power of A is strong enough, the animal is bled under aseptic precautions, and serum allowed to separate and mixed with 0.5 per cent. of carbolic acid.

Sidney Martin recommends that 4,000 units of A should be at once administered in diphtheria. Behring has produced a serum containing 3,000 U of A in 5 or 6 c.c. bulk. 20 c.c. is a maximum volume to be injected at one place.

Again, the *antibacterial or cytolytic* sera are obtained by the repeated injections of living virulent bacteria into an animal *A*, which may protect an animal *B* against infection by the same organism. It is not usually antitoxic, but may be so.

The *agglutinins* are obtained from similar sera, and by their power of "clumping" the organism concerned afford a means of diagnosis. Typhoid, paratyphoid, b. coli communis, Malta fever, etc., can thus be recognised.

A.—Antitoxin. U of A.—Unit of Antitoxin. T.—Toxin. U of T.—Unit of Toxin. M L D.—Minimum Lethal Dose.

As to the results obtained by the use of sera, the value of diphtheria antitoxin may be taken as proved: of 7,000 cases collected by Loddo, the mortality was 20 per cent., as compared with a former mortality of 44 per cent. in the same hospitals. Chronic tetanus, plague, streptococcal and pneumococcal antisera are upon their trial.

Vaccination against typhoid is on the whole favourable to the prevention of the disease and mildness of its course.

Of 49,600 persons, 8,600 were vaccinated with a case incidence 2.2 per cent., and a mortality 12 per cent.; of 41,000 unvaccinated, case incidence was 5.7 per cent. and mortality 21 per cent. (Wright).

The cytolysins are, according to many, the most likely bodies to look to in the future for the successful treatment of cancer.

I am indebted to the kindness of Dr. A. S. F. Grünbaum, F.R.C.P., for permission to make use of this diagram.

A GRANULOMA OF THE NOSE, DUE TO IODIDE OF POTASSIUM.

BY

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C. B., aged 30, a groom, was admitted to the Weston-super-Mare Hospital on February 21st, 1902, suffering from specific disease of nose and larynx, and a granuloma on the tip of the nose.

History of Present Illness.—Thirteen months ago the patient was suddenly "seized with a violent cold in the head," with a profuse discharge of clear, somewhat offensive fluid from the nose. The discharge soon became fœtid and purulent, and pieces of bone were expelled from the nose from time to time: at the same time he suffered from violent pains in his head. Some six months ago two swellings appeared in the palate, which broke down, leaving perforations which persisted. For the last four months his voice has been growing hoarse, and lately has become a mere whisper; his hearing has also become very defective.

Antisyphilitic treatment was begun about a month ago. A week or ten days before admission some spots appeared on his forehead, like an iodide rash, and a small raised granuloma appeared on the tip of his nose, and rapidly increased in size, while similar growths presented themselves on forehead and temples. As the growth on nose grew rapidly worse, and the man appeared thoroughly ill and weak, he was admitted an in-patient.

History of Previous Illness.—Ten years ago, he says, he was treated for rheumatic fever, lasting six weeks; it was complicated with heart trouble, leaving permanent affection of aortic and mitral valves: at that time his hair came out very freely. Two years ago he was treated for gastric ulcer; six months ago, he says, he had "butterfly erysipelas." No history of syphilis could be elicited; but there is a slight scar on prepuce. He attributes his illness to his contact with a horse under his care, suffering from "greasy heels."

Condition on Admission.—The patient looked ill and cachectic when admitted. There was a very offensive purulent discharge from the nose, which showed, by the depression of the bridge, that much bone had been lost by disease. The granulomatous growth was entirely outside the nose, reaching from the edges

of the nasal apertures upwards to the level of the nasal bones, and down the sides over the alæ nasi: it stopped abruptly at the junction of skin and mucous membrane; it was about one inch square, and raised about a quarter of an inch from the surface of the skin; it was covered by skin, and was quite firm in consistence—so firm, indeed, that it could not be scraped away with a Volkmann's spoon when considerable force was used; on pressure it exuded pus from numerous points, like a wet sponge; it was very vascular, and bled considerably when a small piece was cut away with a pair of scissors for diagnostic purposes. The temples exhibited somewhat similar growths, and there were smaller ones on the forehead: there were also some typical iodide spots on the face; there were no spots on any other part of the body. The voice was represented by a hoarse whisper, and breathing was noisy and laboured.

Laryngoscopic examination showed a large ulcerating swelling, like a breaking-down gumma, occupying the position of the left arytenoid and the left vocal cord, and very materially diminishing the space between the cords. The palate showed two perforations. The hearing was considerably impaired. The heart showed marked valvular disease, there being loud aortic and mitral murmurs present.

Diagnosis.—Although there was no ascertainable specific history, there was no doubt that the disease affecting the bones of the nose, the palate, and larynx was of syphilitic origin. The nature of the granuloma was not appreciated at first, and it was not until it was definitely ascertained that, while undoubted syphilitic lesions were improving under mercury and iodide, the granuloma was, if anything, growing bigger, that the iodide was discontinued and arsenic given instead, and caustic applied.

As I was at a loss to explain the nature of this growth, I sent some swabs up to the C. R. A., and a small piece of the growth to Dr. Andrewes and Dr. Drysdale, of St. Bartholomew's Hospital, who very kindly made some cultivations and inoculated a guinea-pig with some of the matter. They reported that there were no tubercle bacilli or glanders bacilli present: there were some bacilli corresponding to some diphtheritic organisms often found in the nose. The guinea-pig died in three to four days, after inoculation, of an acute spreading inflammation of the belly-wall, due to the presence of streptococci and pneumococci.

I was anxious to show the case to Mr. Hutchinson; but the man was so very ill, that I was not able to send him up to town. However, later on, when I showed him the photos and related the history of the case, he decided that the growth was due to potassium iodide on a syphilitic subject, and to a great extent increased by the existing heart lesion, which prevented the proper elimination of the iodide. Mr. Hutchinson also very kindly referred me to one of his own coloured pictures of a similar, but more extensive, affection, at the rooms of the

Polyclinic in Chenies Street. In this case the disease was much more pronounced and extensive: ulceration had taken place in many of the granulomata present in the face. The exhaustion consequent upon this condition has been so extreme as to reduce the patient to the lowest ebb of vitality. Some bromide rashes somewhat resemble this condition, and excellent coloured pictures of these may be seen at the Polyclinic. Mr. Hutchinson says that doubtless some cases of these iodide granulomata have been mistaken for granuloma fungoides, and it has also been mistaken for syphilis. In one case a patient had been taking iodide for a swelling in the groin, supposed to be syphilitic. The eruption had soon appeared, and had gone on steadily increasing, the specific remedy being pushed under the impression that the disease was syphilis.

Treatment.—The internal administration of arsenic was tried, but it had practically no effect upon the growth, and accordingly a saturated solution of chloride of zinc and collodion was applied to the growth: this caustic caused a big slough to separate, and a smooth, red, granulating surface was left, which slowly scarred over. The growth has not returned. His recovery was delayed by a severe attack of tachycardia; and as he had double aortic and mitral disease, it was feared he would not recover. However, he slowly became convalescent, and left the hospital. At the time of leaving, the nose presented a smooth, white, scarred surface at the seat of the former growth. The discharge from the nose was much less offensive. The laryngoscope showed that the gumma had healed, dragging down the epiglottis over the larynx, thereby much diminishing the entrance to the glottis.

Remarks.—The chief point to be noted about this decidedly rare condition is, that its nature is apt to be overlooked, and consequently the iodide to be continued. In this case the diagnosis was rendered more difficult by the fact that some undoubted iodide spots on the forehead disappeared, while the granuloma increased.

Acne due to iodide is apt to become tuberous. Iodide rashes are more apt to occur if there be either cardiac or renal disease present, causing a defect in elimination. An iodide rash may begin in twenty-four hours on pot. iod., gr. v. t. d. s.

The granuloma is a solid one, a copious cell-exudation pushing up the epidermis as a whole. In the College of Surgeons' Museum, in the Dermatological Section, there are some good representations of iodide granulomata:—

Drawing No. 30—*Exudations: Iodide Eruptions.*—A man with tuberous thickening of nose, face, and arm. (James Adams.)

DRAWING No. 31—*Ditto.*—A man. On face, neck, and thorax are very prominent hemispherical inflammatory swellings, ulcerating; some as big as walnuts.

DRAWING No. 28—*Ditto.*—A man, horsekeeper. Inflamed and elevated sores, which patient believed to be due to inoculation with "grease." (J. Hutchinson.)

This last case is of interest, inasmuch as this patient, too, attributed his condition to "grease," from which a horse under his care was suffering.

THE PRACTICAL VALUE OF BLOOD-COUNTS.

BY

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THE importance of recent work on blood-counts, and the rather fragmentary information afforded by all except special works, are my excuse for bringing before you a paper which makes no claim to originality, and whose sole object is to outline the present state of the subject as briefly and clearly as I can.

I would restrict what I have to say to the changes in the numbers and appearances of the blood-corpuscles themselves, leaving out of account those parasites which may inhabit them or exist in the plasma between them; I would omit all names of authorities, as tending to interfere with simplicity of statement; also all points at present under dispute, as apt to obscure the definiteness of facts already established; as well as all those details of methods which can be sufficiently gathered from text-books like Clifford Allbutt's *System of Medicine* or Allchin's *Manual*, merely reminding you that these methods consist in:—

I. The examination of fresh blood under the microscope.

II. The enumeration of red and white corpuscles by the hæmocytometer.

III. The estimation of the hæmoglobin by the hæmoglobinometer.

IV. The examination of dried blood-films stained, say, with eosin and methylene blue. (It will be necessary to remember that eosin is an acid and methylene blue a basic stain, so that red-stained structures are termed oxyphile, and blue-stained structures are termed basophile. Structures staining with both colours, *i.e.*, violet, are called polychromatophile.)

Lastly, I would omit, as far as possible, everything which has at present no practical application.

Before describing what is pathological, it will be well to remind ourselves of what is physiological.

NORMAL CONDITIONS.

The Red Corpuscles.

In health the red corpuscles number about five millions per cm. in the adult male, and about four and a half millions in the adult female. At birth they exceed these numbers, nearly amounting to six millions, but the excess vanishes in about a week. 75 per cent. of the red corpuscles measure 7.5 μ. across (μ. being the one-thousandth part of a millimetre), and of the remaining 25 per cent., about half are larger, nearly 9 μ., and half are smaller, nearly 6 μ. A few very small ones, called microcytes, are sometimes found, varying in size from 3.5 μ. to 6 μ. The shape of normal red corpuscles is fairly uniform, and so is their hæmoglobin value. They are faintly oxyphile, and therefore stain pink with a mixture of eosin and methylene blue.

The White Corpuscles.

In health the white corpuscles vary considerably in number. We may probably take 7,500 per cubic millimetre as the normal average, and 5,000 and 10,000 as the normal limits of variation. Within these limits certain physiological conditions considerably affect their numbers. Thus proteid digestion and violent exercise cause what is spoken of as "physiological leucocytosis," *i.e.*, an increase in number which may amount to 33 per cent. Physiological leucocytosis due to these causes probably never raises the numbers of the white corpuscles to above the 10,000 limit; but there are two other causes of leucocytosis which must be regarded as physiological, yet give rise to a much

greater increase in numbers, viz., the leucocytosis of child-birth and the leucocytosis of the newly-born. The former begins during pregnancy, reaches its maximum of about 20,000 at parturition, remains high for about a week, and then gradually subsides; the latter may amount to 21,000 just after birth, but falls to nearly normal in about ten days.

In order to estimate the degree of digestive leucocytosis in a given person, the corpuscles must be counted before the first meal of the day and at intervals after it. The leucocytosis begins about an hour after the meal, reaches its maximum in about three hours, and subsides again in about three hours more. It is greatest after a meat meal, less after a mixed meal, and absent after a vegetable meal.

There are five kinds of white corpuscles found in healthy blood, viz., polymorphonuclear cells, eosinophile cells, large hyaline cells, small hyaline cells, and finely granular basophile cells. Their relative proportions have been variously stated. We shall probably not greatly err in stating them thus:—

Polymorphonuclears ...	70 per cent.
Eosinophils	2 ,,
Large hyaline cells	4 ,,
Small hyaline cells	24 ,,
Finely granular basophiles ...	extremely few.

In infants the hyaline cells, especially the small hyaline cells, are relatively much more numerous, the polymorphonuclears being correspondingly fewer.

The **Polymorphonuclear cell** measures about 10 μ. in diameter. Its nucleus seems divided into several,—hence the name,—and stains deeply with methylene blue. Its protoplasm is fairly abundant, and is full of fine granules, which stain pink with eosin; hence it is sometimes called a finely granular oxyphile cell. In fresh blood it is amœboid.

The **eosinophile cell** measures about 11 μ. in diameter. Its nucleus is less divided than that of the polymorphonuclear, and stains more faintly with methylene blue. Its protoplasm is fairly abundant, and is loaded with large, strongly-refracting granules, obvious even in fresh blood, but very obvious in stained

films, being coloured brilliantly red with eosin; hence the name, eosinophile; it is also called the coarsely granular oxyphile cell. It is amœboid in fresh blood.

The **large hyaline cell** (sometimes also called large mononuclear, or large lymphocyte) may measure 12 μ. in diameter. Its nucleus is single, oval, or notched, staining moderately with methylene blue. Its protoplasm is abundant, and, as its name implies, free from granules, staining faintly blue. It is also amœboid.

The **small hyaline cell** (sometimes called small mononuclear, or small lymphocyte) is about the size of an average red corpuscle, or 7.5 μ. in diameter. Its nucleus is single, large and round, almost filling the cell. The protoplasm is a mere ring. The whole cell stains deeply with methylene blue.

The **finely granular basophile cell** is the smallest and rarest. Its nucleus is much divided, and stains slate colour with methylene blue. Its protoplasm stains faintly, the granules deeply, with the blue.

PATHOLOGICAL CONDITIONS.

The Red Corpuscles.

In disease the red corpuscles may occasionally be increased in **number**: thus in the algid stage of cholera six and a half millions per cubic millimetre have been found; but much more commonly they are reduced in number, their reduction constituting one chief feature of anæmia. Anæmia may be taken in terms of the red corpuscles, to begin at 80 per cent., to be decided at 65 per cent., grave at 50 per cent., very grave at 35 per cent., and fatal at 7.5 per cent.

The **hæmoglobin value** of the red corpuscles may be occasionally increased, especially in pernicious anæmia; but it is far more commonly decreased, as in chlorosis, and the so-called secondary anæmias. Anæmia may be taken, in terms of the hæmoglobin, to begin at 80 per cent., to be average at 60 per cent., intense at 40 per cent., and extreme, with imminent danger to life, at 16 per cent.

The **size** of the red corpuscles varies in disease more than in health. Microcytes are more common in anæmia than in health,

and megalocytes are found as well: megalocytes measure from 9.5 to 14 μ. across. A very small darkly-coloured microcyte, called Eichhort's corpuscle, has no special significance.

The **shape** of the red corpuscles may be greatly altered. Poikilocytes are red corpuscles which, instead of being circular, are oval, pear-shaped, racket-shaped, or covered with many irregular projections.

Lacunæ may appear in the stroma, indicating degeneration. Their **reaction to stains** may alter: instead of staining pink with a mixture of eosin and methylene blue, they may stain violet, *i.e.*, become polychromatophile, or darkly purple-staining granules may appear in their stroma, as in lead poisoning.

Nucleated red corpuscles may make their appearance: these are of two kinds, viz., normoblasts, which are almost the size of normal red blood-corpuscles, and megaloblasts, which may measure 16 μ. across. The nuclei stain blue with a mixture of eosin and methylene blue, and the stroma may be either pink or violet. Both may be irregular in shape, and are then called poikiloblasts.

It should be clearly borne in mind that very severe anæmia from any cause may be associated with the presence of poikilocytes, megalocytes, normoblasts, vacuolated corpuscles, and polychromatophiles—also poikiloblasts.

In diseases associated with active removal of hæmoglobin from the red cell, as in paroxysmal methæmoglobinuria (during the attack), the faint outlines of dichromised corpuscles are seen, and named "**shadow-corpuscles.**"

The White Corpuscles.

In disease the leucocytes may be occasionally reduced in number: this condition, which is called **leucopenia**, is found markedly in typhoid fever; but much more commonly they are increased in number: this condition, known as "**pathological leucocytosis,**" may be so marked that 100,000 leucocytes are found in each cubic millimetre, as in some cases of pneumonia and of empyema.

The relative proportions of the various forms of white corpuscles may remain unaltered in pathological leucocytosis,

as in some cases of sarcoma, but usually, as in abscess cases, the chief increase is found in the polymorphonuclears, which may amount to 95 per cent. of all leucocytes. Less commonly, as in some cases of rapidly-growing sarcoma, and in the lymphatic form of leucocythæmia, as well as in the leucocytosis of infants from any cause, the hyaline cells are chiefly increased: in leucocythæmia they may amount to 95 per cent.

The large hyaline cells (or large mononuclears) may be relatively increased to over 12 per cent. of the white corpuscles present, and this appears to be an important fact in malaria. The eosinophiles may be relatively increased (even to 68 per cent.), and this increase is of importance in trichinosis and other parasitic diseases. New forms of leucocytes may make their appearance.

Myelocytes are very large cells, measuring even 20 μ. in diameter. The nucleus of the myelocyte is single, oval, or lobed, staining moderately with methylene blue. The protoplasm is abundant, stains faintly with the blue, and contains granules which stain red with eosin. These granules may be fine or coarse; the coarsely granular cells are called **eosinophile myelocytes.** The myelocytes are not amœboid; they rarely occur except in spleno-medullary leucocythemia, and when they do occur in other diseases they are very few in number. In leucocythemia they may amount to 50 per cent. of all leucocytes. The eosinophile myelocyte is said to be peculiar to spleno-medullary leucocythemia.

Mast cells are basophile cells with large irregular granules, staining dark violet with methylene blue; their significance is doubtful, except that they are never found in health: they may measure as much as 20 μ. in diameter.

APPLICATION OF THE FOREGOING.

What can we learn from the observation of these alterations in disease?

1.—Suppuration.

The presence of leucocytosis of a certain degree may frequently be of the greatest value in the diagnosis of abscess,—apparently of abscess anywhere,—and its degree, or its absence, may give useful prognostic indications.

The chief observations on this point have been made in cases of **appendicitis**, and the outcome for that disease may be summarised thus:—

1. A count of 20,000 or over in the first two or three days strongly suggests general peritonitis.
2. A count of 20,000 or over at the end of the first week almost certainly means an abscess.
3. Leucocytosis to a less extent is doubtful in significance.
4. Absence of leucocytosis means one of three things—
   (*a*) Fulminating appendicitis where the resistance of the body is overwhelmed.
   (*b*) A very mild case.
   (*c*) An abscess enclosed within thick walls.
5. After operation, a leucocytosis which persists beyond the third or fourth day means probably either pockets of pus or peritonitis.
6. Leucocytosis should not be relied on alone; but, taken with other signs and symptoms, is often an invaluable help: it affords earlier indications of pus than surface œdema, sweats or diarrhœa.

As regards prognostic indications—

Absence of leucocytosis in presence of obviously septic appendicitis is of bad augury.

Absence of leucocytosis with mild early symptoms is of good augury.

Absence of leucocytosis with obvious abscess means the presence of a thick wall and absence of extension.

Increasing leucocytosis indicates extending infection.

Diminishing leucocytosis indicates diminishing toxicity or walling of an abscess.

My experience would lead me to strongly recommend the observation of the blood as a routine measure in all cases of appendicitis, even in the rough way of mere inspection of a fresh drop of blood under the microscope. A large leucocytosis is very obvious in such a preparation, and has on several occasions guided me in doubtful and discussed cases to a correct

diagnosis of pus. Hæmocytometers are not always at hand, and everyone does not possess one, nor has everyone the time needed for a regular blood-count; but very few medical men are nowadays without a microscope, yet few realise how obvious a leucocytosis of 20,000 is in a fresh specimen of blood, when compared with a similar specimen from the finger of a healthy person. An observation sufficient to determine this occupies about five minutes, and a blood-film may be stained with eosin and methylene blue in about another five minutes.

Abscess of the brain has given me a very decided leucocytosis: this will probably be a valuable distinction from cases of tumour, as the following instance suggests.

Some time ago a small boy was admitted under my care in this hospital with headache, sickness, double optic neuritis, low temperature and pulse-rate, drowsiness, and paralysis of the left third cranial nerve, with paresis of right arm and right lower half of face. He had had for years a discharge of pus from the left ear, but this had recently stopped. I think no one will wonder that I asked my colleague, Mr. Harris, to operate for a probable large cerebral abscess in the left tempero-sphenoidal lobe. But there was no leucocytosis. No abscess was found, but after death, some weeks subsequently, a tumour was discovered growing in the tempero-sphenoidal lobe, just over the diseased ear. In another such case absence of leucocytosis would probably guide one to diagnose tumour rather than abscess, though still, no doubt, the proper course would be to trephine and explore, because leucocytosis would probably be absent if the pus were thickly walled in.

Empyema.—I have several times suspected that an effusion into the chest was purulent on account of a considerable leucocytosis, and found myself mistaken. But after seeing the tremendous leucocytosis which empyema produces, one will be little likely to fall into that error again. Osler has recorded a case where the white corpuscles amounted to 115,000 per cubic millimetre. It is very interesting to note that serous tubercular pleurisy seems to produce no leucocytosis at all. A blood-count has enabled me to exclude empyema before the exploring syringe showed that the fluid was serous.

Liver abscess, according to several observers, may be diagnosed by the presence of leucocytosis from other diseases of that organ. Probably the degree of leucocytosis varies with the organ in which the abscess lies (thus its degree is different in appendicular abscess and empyema). Another useful test for suppuration is the so-called iodine reaction of the white corpuscles.

2.—Blood Diseases.

Turning next to so-called "Blood diseases."

In chlorosis the hæmoglobin is reduced more than the red corpuscles; the red corpuscles rarely fall below two millions. Megalocytes are not common, megaloblasts absent or very rare. Leucocytosis does not occur.

In pernicious anæmia the red corpuscles are generally more reduced than the hæmoglobin; the red corpuscles frequently fall below one million. Megalocytes are always present; megaloblasts are generally present and in greater numbers than the normoblasts. Leucocytosis may occur late, but leucopenia is the rule. A few myelocytes may be found.

In splenic anæmia the hæmoglobin falls more than the red corpuscles; the red corpuscles may fall even to one million. Megalocytes do not occur, nor does leucocytosis. These characters are of immense importance as distinguishing this disease, in which splenectomy usually cures, from leucocythæmia in which it is invariably fatal.

In Hodgkin's disease the blood is normal in the early stages, and, later, the changes are not pronounced.

In secondary anæmias the hæmoglobin falls faster than the red corpuscles; the blood shows no special features, except those of severe anæmia when it occurs.

In spleno-medullary leucocythemia red cells and hæmoglobin generally fall together; the red cells rarely fall below two millions. Megalocytes may occur. Normoblasts are constantly present, even when anæmia is slight and their occurrence with so little anæmia is said to be peculiar to the disease. Megaloblasts are generally present, but in smaller numbers than the normoblasts. The leucocytes are enormously increased—half a million is not uncommon; but more important than the number is the

presence of a large proportion of myelocytes—even 50 per cent., which occurs in no other disease. Eosinophile myelocytes are said to be only found in spleno-medullary leucocythemia.

In lymphatic leucocythæmia the hæmoglobin falls about *pari passu* with the red cells; the red cells, however, almost always fall further than in spleno-medullary leucocythæmia. Normoblasts and megaloblasts are extremely rare, and if found are few. The leucocytes are greatly increased, but not so greatly as in the spleno-medullary disease; they vary from forty thousand to a quarter of a million Large and small hyaline cells are the predominant form of leucocytes, constituting sometimes 95 per cent. of those present ; myelocytes are rarely found, and if found are few. These characters do not always distinguish from cases of sarcoma.

In hæmorrhagic blood diseases the blood characters are seemingly just those of post-hæmorrhagic anæmia. Hæmoglobin falls faster than red cells. Megaloblasts are always fewer than normoblasts if present. Leucocytosis is usual, and generally chiefly affects the polymorphonuclears.

3.—Helminthiasis.

The worm-parasitic diseases have the curious characteristic of often increasing the relative number of eosinophiles producing a condition known as "eosinophilia." It is at once obvious in a stained film.

In trichinosis this increase may actually amount to 68 per cent. of a leucocytosis of 20,000, and is of decided value in diagnosis.

In anchylostoma 72 per cent. have been observed. Such a count in a case of very severe anæmia in the tropics would lead to a search in the stools for the characteristic ova.

In tænia mediocanellata 34 per cent have been seen.

In filariasis, bilharzia, ascarides and oxyuris, counts of about 20 per cent. have been recorded.

4.—Other Causes of Eosinophilia.

But *eosinophilia* is not confined to worm-diseases. In *emphysema* and in *the attacks of true asthma* it has been discovered,

and it is said that by its means true asthma can be distinguished from so-called cardiac and renal asthma.

In some functional nervous diseases as *chorea*, *hysteria*, and *neurasthenia*, and in some skin diseases as *pemphigus*, *psoriasis*, *dermatitis herpetiformis* and *leprosy*, eosinophilia exists to a moderate degree.

5.—Acute Specifics.

In certain *acute specific diseases*, the characters of the blood-corpuscles may be of great value.

In **typhoid** leucopenia exists, and may be marked. This distinguishes the disease from diseases like gastro-enteritis, in which there is leucocytosis; leucocytosis, however, sets in rapidly when a complication occurs in typhoid, as hemorrhage or perforation.

In *typhus*, *influenza*, *measles*, *tuberculosis* and *malaria*, there is usually no leucocytosis. On the other hand, leucocytosis occurs in *pneumonia*, *scarlet fever*, *small-pox*, *diphtheria*, *erysipelas*, *whooping cough*, *acute rheumatism*, *pyæmia*, *septicæmia*, and *plague*. The diagnostic importance of these differences is obvious.

Its absence in uncomplicated **tuberculosis** is a point of considerable value. In **malaria** the usual low leucocyte count seems to be of undoubted value; but even more striking appears the diagnostic value of a relative increase, which occurs in the large mononuclear hyaline cells to 12 per cent. and over. This increase of large mononuclears has been found in 90 per cent. of cases, whilst malaria parasites could only be demonstrated in 17 per cent.

In **pneumonia** the leucocytosis is immense, and near the crisis may reach 100,000. The rules governing it seem very like some of those connected with the leucocytosis of appendicitis: thus a malignant pneumonia may have no leucocytosis, and the absence of leucocytosis in a very severe case is of bad omen. Apart from cases so bad as this, the degree of leucocytosis is usually in proportion to the severity of the case; a very abundant leucocytosis at the time of crisis is said to be a good sign.

In **whooping cough** the very marked leucocytosis is said to be a useful diagnostic point before the whoop develops.

6.—Young Children.

In examining the blood of very young children it is important to remember that—

I. Severe anæmia may result from trifling causes.
II. That leucocytosis may also result from slight causes,
III. And is apt to be a lymphocytosis.
IV. That the spleen is apt to enlarge in any severe anæmia.
V. That nucleated red cells are more commonly found.
VI. That hereditary syphilis and rickets, cause some of the severest anæmias;
VII. That in them tuberculosis does cause leucocytosis.

7.—Malignant Disease.

With regard to malignant disease, opinions seem to differ as to the value of a blood examination. I have found very marked leucocytosis in some cases of sarcoma. The absence of digestive leucocytosis in cases of cancer of the stomach becomes less useful diagnostically when we consider that other gastric diseases, such as chronic gastritis, may give rise to it.

In conclusion, I may say that I feel I have placed before you a very rough *résumé* of a wide subject; but if I have satisfied you that the subject is a very important one, I shall have been justified in doing so.

FOUR CASES OF RENAL CALCULI TREATED SUCCESSFULLY BY LUMBAR NEPHRO-LITHOTOMY.

BY

E. J. Trevor Jones, M.D. Brux., M.R.C.S., L.R.C.P. Lond.

The early diagnosis and extraction of a stone from the kidney before suppurative changes have been induced by it is one of the great elements in the successful treatment of renal calculi. It is, however, a matter of common experience that exploratory incisions not infrequently fail in the detection of a

calculus, which was supposed to be present from the character of the symptoms; but I have found one constant symptom in my cases—viz., hæmaturia—although we know this symptom may be entirely absent, and in each case it was more severe after violent exercise.

Case 1.—J. M., a collier, aged 24, came under my care in April, 1899. He had fixed renal pain on the left side, increased by abrupt bodily movement and exercise, radiating at times along the ureter to the groin and testicle, and sometimes a sharp stabbing pain was complained of on lumbar percussion. There was no history of definite renal colic. After a hard day's work underground he had noticed the urine of a dark colour, and on those occasions there was inability to sleep except on the painful side. These symptoms he had off and on for three years before he came to consult me. For the constant left lumbar pain he asked relief, and was admitted into the Aberdare Cottage Hospital. On May 25th, 1899, I cut down by the oblique lumbar incision, and on passing the finger to the pelvis I felt a stone. The kidney was incised along its convex border, my left finger and thumb controlling the hemorrhage. After a good deal of difficulty, I succeeded in extracting the stone. The hemorrhage was not severe. The kidney was now flushed out with 1 in 20 sterilised boracic solution, and a drainage tube passed down to the kidney wound. No stitches were inserted into the kidney substance. For fourteen days urine escaped by the wound, after which it healed kindly, and the patient left the hospital three weeks later cured. I have seen the man lately, and he has not lost a day's work since.

Case 2.—A collier, aged 27, had right lumbar pain on and off for four years. He had a history of several attacks of renal colic, with the passage of gravel. He came under my care on March 22nd, 1900. There was pus in the urine, which was acid, and there was slight hæmaturia. He stated that on occasions there was a distinct swelling in the right lumbar region. He was admitted into the Aberdare Cottage Hospital on March 23rd, and sounded for stone, with a negative result. As he was anxious for operation, I cut down on the kidney and found a stone blocking the pelvis of the kidney. An incision was made along the convex border and the stone extracted by forceps, after the exercise of considerable patience, as it would have been easier to make a direct incision on the stone through the pelvis. The kidney was then well flushed out and dressed in the usual way.

Case 3.—On November 10th, 1901, a man (M. J.) came to me with the following history:—For some years he had suffered from renal colic, which passed off under treatment; but lately he noticed the urine was dark and porter coloured, worse after

a long day's work. But what troubled him most was the severe pain in the right lumbar region, which shot down to his thigh. On November 25th, 1901, I cut down and found a stone firmly fixed in the pelvis. After a good deal of manœuvring with scoop and forceps, I managed to extract it through the convex border of the kidney. The hemorrhage was severe, but easily controlled by pressure. The case was dressed in the usual way. He was discharged in five weeks' time, and has been in good health since. For the first week there were some distressing symptoms of colic, caused by blood clots passing down the ureter, which were relieved by large draughts of hot water.

Case 4.—A man, aged 30, was seen by me on January 19th, 1902, with severe colic and left lumbar pain. He had not had such pain for ten years, when he suffered acutely for about a week, when he believed he passed something which gave him great relief, and was free from pain until the present attack. He got better under treatment, but a month later I was called to see him in great pain. His urine was acid, with hæmaturia and some pus. Being anxious to be relieved, I admitted him into the Cottage Hospital, and cut down on the kidney on February 23rd, 1902, and found a small, hard stone with a pointed edge lying towards the ureter. On removing the stone through the convex border of the kidney I found a small distinct facet on it, but on carefully searching the pelvis and kidney proper could find no other stone present. It is possible that the other stone passed ten years previously, when he had the first attack. The patient made a good recovery, and has since enjoyed excellent health.

With regard to the diagnosis of stone in the kidney, the more or less fixed renal pain, plus slight recurrent hæmaturia worse after exercise, the blood being intimately mixed with the urine, but slight and dark in character, are when present no doubt diagnostic of stone. And in these cases there can be little hesitation in exploring the kidney, especially when the pain is definitely referred to one side; and in those cases of doubt the X-rays will in future play a more important part in the diagnosis, as mentioned in a paper by Mr. Hutchinson, jun., in the *British Medical Journal* for October 19th, 1901.

With regard to the pelvic stones, in two of the above cases it would have been much easier to have cut direct on the pelvis; but I was afraid of a fistula by this method, as I believe there is less risk of urinary fistulæ by cutting through the cortex, although there may be more hemorrhage.

Progress of the Medical Sciences.

MEDICINE.

It has been remarked that a new view of the power of self-adaptation by the human organism to its surroundings has been given us by recent investigations in two very different directions. On the one hand, Pawlow and his followers have shown that the digestive organs, and especially the pancreas, elaborate just such ferments as are appropriate to the particular food which stimulates them, and that therefore these vary according to the diet actually taken. On the other, the blood manufactures an infinite variety of lysins and antitoxins when the corresponding toxins are injected into the stream. The latter reaction has not only afforded the means of combatting the infectious fevers, but it has yielded **the biological test for blood**, a means of detecting human and indeed other bloods, as, for instance in stains. The importance of this in forensic medicine is evident at first sight, for it has been thus possible to distinguish human from animal blood which has been shed for thirty years. Even septic processes do not interfere with the reaction.[1] Many workers in this country and abroad have been occupied with the details, and quantitative measures of the reaction have been obtained. The foundation of the whole matter lies in the fact that the serum of an animal which has been several times inoculated with serum from a human being or from a given species of animal will give a "precipitum" when brought into contact with the blood of a human being or of that one species of animal and with no other. Thus serum prepared for human blood reacts only to a drop of human blood whether dried or fresh, that for horses only to equine blood, that for a bird only to the blood of that species.

The reacting bodies in the various bloods and those in the sera of the inoculated animals are remarkably stable, so that both the sera and the dried blood stain may be kept for years unimpaired. Even when the blood is mixed with earth, fatty matters, and various chemicals the reaction can still be obtained; and though a few substances, such as corrosive sublimate or quicklime, prevent the change, it is possible to remove some of these, such as lime, and then to obtain the reaction. Thus the test is available in most conditions where it is needed in legal cases. Again, while a definite precipitum can be obtained in a fixed time with the blood of the animal suited to the serum, Nuttall and Dinkelspiel show that a slight cloud appears with

[1] Graham-Smith & Sanger, *J. Hygiene*, 1903, iii. 258.

the blood of allied species. Thus the "anti-horse" serum reacts only with the blood of the horse, and perhaps the ass, out of tests on the blood of 500 mammals; but a cloudiness is seen on longer exposure with the blood of all mammals, but not of birds, The "anti-lobster" serum reacts with the blood of lobsters, cray fish and five kinds of crabs out of another series of 500 tests, and gives a cloudiness with the blood of more or less allied species, so that the comparative relationships of different groups and orders can be distinguished. Furthermore, the various fluids of the human body can be detected if we have "antisera" which react to each. Martens, finding that a serum produced by injections of albuminous urine reacted to blood, argued that the albumen must be a blood and not a kidney product. However, this deduction needs verification; but the reliability of the test for distinguishing the blood of one animal from another seems to be beyond reasonable doubt.

As a parallel we may turn now to some of the recent work which has been done on the **pancreatic secretions**. It has been shown that each special kind of food leads to the secretion of a digestive juice fitted to act on it. Thus a flesh diet is followed by the secretion of very little trypzymogen, while bread or potatoes produce a large amount.[1] Walther found a fatty diet led to the secretion of a juice rich in steapsin, which breaks up the fat; while Weinland discovered that a milk diet caused the appearance of lactase, which splits up milk-sugar, and is not usually present when other diet is given. Similar selective power is shown in the production of salivary and gastric secretions. The pancreas, however, not only secretes various substances which play an active part in digestion, but it shares in the subsequent metabolism of the carbo-hydrates which have been absorbed. Since Minkowski and others showed that removal of the pancreas was followed by a form of diabetes, some action of the kind has been suspected. Of late it has been argued that this "internal secretion" is due to "certain groups of polygonal cells arranged in columns known as the islands of Langerhans."[2] These are grouped round the blood vessels, and probably represent the primitive pancreas, which has subsequently taken up in addition digestive functions. In certain cases where these islands are affected by what Opie calls interacinar pancreatitis, diabetes results. On the other hand, diabetes does not occur when the whole gland except these islands has degenerated, as in cases of obstruction of the common duct. Thus the islands appear to be the source of a sugar-destroying substance. Lepine had shown that such a substance exists in the blood, and A. C. Croftan[3] has apparently proved that it is contained in the leucocytes, and is probably identical with trypsin. Now, neither this nor the other secre-

[1] *Brit. M. J.*, 1903, ii. 207.
[2] Moynihan, *Practitioner*, 1903, lxxi. 256.
[3] *Am. J. M. Sc.*, 1902, cxxiii. 150; and *Med. News*, 1902, lxxx.

tions of the pancreas can split up sugar or glycogen in pure solutions; but Croftan shows that in the presence of hæmoglobin this ferment does split it up, and at the same time forms bile pigment and bile acids. Thus carbo-hydrate metabolism or glycolysis depends on the liberation of hæmoglobin in the presence of a form of trypsin produced in the pancreas and carried everywhere by the leucocytes. One cause of diabetes then is the failure of the pancreas to supply this ferment for the normal metabolism. It is impossible here to discuss the inhibitory power over this function of the pancreas which is possessed by the suprarenals. Herter[1] and his colleagues have of late worked at this regulatory mechanism, showing that stimulation of the suprarenals, or the application of a minute drop of adrenalin to the bared pancreas is followed by glycosuria. However, the subject is at present an obscure one, and the action of the suprarenals may not be truly inhibitory after all, but counterbalancing only.

* * * * *

Bovine tuberculosis.—The great question as to the communication of this disease to man is by no means set at rest, and the direct proof of its conveyance by food presents almost insurmountable difficulties. It is said on the one side that the bacillus of tubercle in men and animals is the same, though modified by the habitat in which it grows, and on the other that there are two distinct organisms, neither of which can be made to grow except in its proper host. Some writers, like Nathan Raw, accept the duality, but contend that tuberculosis in men is due to both organisms. Indeed, the latter author, in his paper at Swansea, takes the extreme view that the majority of cases of tuberculosis in this country are due to bovine infection through milk. He obtained from Koch some cultures of the bovine bacillus, and while he confesses that its morphological characters are very different from those of the human form, he claims that bacilli grown from tuberculous joints and mesenteric glands in the human being show just these pecularities, and that these diseases, and probably lupus, are due to bovine infection, while true phthisis, on the other hand, is the effect of the human variety of the bacilli.[2] Here we have the old distinction of struma and phthisis placed on a bacteriological basis, though it is difficult to accommodate the theory to the numerous facts accumulated in the last thirty years in favour of the identity of the two classes of affections.

One of the very few points on which all parties are agreed is that, if bovine tuberculosis occurs in men at all, it is usually introduced through the alimentary canal.

Thus Koch argues (1) from the absence of great outbreaks

[1] *Med. News*, 1902, lxxx. 865; lxxxi. 769; abstract in *Med. Chron.*, 1902–03, xxxvii. 66.

[2] *Brit. M. J.*, 1903, i. (Jan. 31).

where many persons have drunk tuberculous milk, and (2) from the rarity of primary intestinal lesions.

Can we then separate these alimentary cases from those due to air infection? On this point opinions differ widely. It has been shown that bacilli may pass through the intestinal wall to the mesenteric glands without affecting the former. Hence the first lesion need not be in the intestine.

Ravenel[1] would go further, and thinks that food infection may take place through the tonsils, and again that the bacillus may pass through the intestine, the mesenteric, and other lymph glands to the lung, where the first lesion may occur, and that the fact of the chief enlargement being that of the bronchial glands does not point to the lung as the primary entrance. Price-Jones[2] takes a narrower view. He divides all ordinary cases into Pulmonary, Alimentary, and Generalised. The first have enlarged bronchial glands without obvious disease elsewhere, and he denies that these cases can arise from food infection. The Alimentary type shows enlarged mesenteric glands and none elsewhere, while the Generalised type is of uncertain and indistinguishable origin. The statistics of numerous English and American writers are vitiated for the want of a common definition of cases of Alimentary origin; but taking his own rigid definition, he gets 25 per cent. of the deaths in children as of this type. This, of course, is far above the German, and indeed above most American estimates of its frequency, though other English authorities put it at the same figure and even higher.

The Royal Commission on Tuberculosis is at the present time collecting, through pathologists in various centres, reports of cases due to intestinal infection, so that ere long more definite facts may be looked for.

The question, however, arises, Are these Alimentary cases due to swallowed human bacilli or to bovine infection through milk? Do bacilli isolated from any of them resemble in their mode of growth those of pulmonary origin? or are they like those obtained from cows with tuberculous udders, for even those found in milk may have fallen in it from human sources? The possibility of an answer depends on whether or no bovine bacilli lose their peculiarities after passing through a human being.

Apart from food infection, the transmission of bovine tuberculosis to men by wound infection has been also denied. Ravenel, however, quotes several well-authenticated cases, and Spronck and Koefnagel[3] report an instance where a butcher cut his finger in working on a tuberculous animal. The sore became an ulcer, and produced an enlarged gland at the elbow. From the sore and the gland inoculations were successfully made into guinea pigs, and the disease was then transmitted to others

[1] *J. Tuberculosis*, 1903, v. 69. [2] *Practitioner*, 1903, lxxi. 191.
[3] *Birmingh. M. Rev.*, 1903, liii. 59.

and to a calf. However, an unexceptional proof in such cases is clearly difficult to obtain, for secondary infection of a sore from another source is always possible.

The next point is, Can human tuberculosis be transmitted to cattle? Koch and Baumgarten deny this, but they are testing the matter exhaustively in Germany.[1] They reject as faulty the methods of Arloing and others, and claim that only subcutaneous injections of small amount are trustworthy; neither feeding with tuberculous matter nor injections into the veins or peritoneum are of value. Thus Arloing by the intravenous route infected twenty-three animals with human tubercle.[2] Schottelius infected three oxen by feeding them on human sputa with every precaution against other infection. Fibiger and Henson infected eight cattle by injections, five of which were apparently subcutaneous, and Ravenel in America was equally successful.[3] More recently in Scotland Hamilton and M'Lauchlan Young have succeeded in disproving Koch's assertion while complying with his conditions.[4] Besides other cases infected by food, they transmitted the bacilli to five calves by subcutaneous injections with minute precautions, the animals and the food on which they were fed being previously tested.

When the inoculated calves developed tuberculosis, the disease was next transmitted to others by injection, showing that the results were not produced by dead human bacilli and their toxins, but that actual growth had taken place in the calves. Indeed, human bacilli thus ingrafted on a calf gain enormously in virulence when inoculated on a second one. They also find that the morphological characters are no guide to the source of the bacillus, and hold that their results are in favour of the identity of the human and bovine bacilli.—*(Report to the Highland Agricultural Society.)*

On the whole, then, there seems strong reason to believe that bacilli can be transmitted from men to animals, or *vice versâ*, and flourish in their new habitat, but whether such transmission by milk and similar foods is frequent has not yet been decided, and indeed no certain means of solving the question appears to have been found. Even Koch's argument from the absence of epidemics where tuberculous milk has been widely drunk may be met by reference to the millions of persons who fail to contract phthisis, though daily absorbing hosts of bacilli from phthisical patients.

GEORGE PARKER.

SURGERY.

Primary Carcinoma of the Vermiform Appendix.—Dr. A. W. Elting[5] has looked up the original reports of recorded cases of carcinoma of the vermiform appendix, and finds that although

[1] *J. Tuberculosis*, 1903, v. 1, 41. [2] *Bull. de l'Acad. de Méd.*, 1901, xlvi. 897.
[3] *Univ. Penna. M. Bull.*, 1902–03, xv. 66.
[4] Quoted in *Hospital*, 1903, xxxiv. 75. [5] *Ann. Surg.*, 1903, xxxvii. 549.

doubtful cases were described by Merling in 1838,[1] and by Prus in 1865, the first important article on the subject was by Rokitansky in 1867, who reported four cases of what he believed to be primary carcinoma of the appendix.[2] The first case was observed in 1847 in an individual 82 years of age. In this and in the other three cases the walls of the appendix were converted into a fibrous sac, from which trabeculæ extended into a lumen containing greyish gelatinous material; but in the absence of a microscopical report these cases may be considered somewhat dubious. He examined the literature of reported cases up to 1902, and he found that of thirty-two reported cases of primary carcinoma of the appendix, twenty could be regarded as proven and confirmed by microscopical examination. To these Elting adds three cases studied by himself in patients aged 81, 36, and 19 respectively. One showed the structure of an alveolar carcinoma arising in an obliterated appendix, and in the other two the carcinoma was colloid, in one of them the colloid contents projecting through an aperture opposite the mesenteric attachment.

Carcinoma of the appendix seems to be one of the sequelæ of chronic inflammation of the organ, exemplified by its occurrence in an obliterated appendix; and seeing that the carcinomatous nature of the affection has usually been accidentally discovered on microscopical examination, and not suspected before, it is probable that a more careful routine examination of appendices after removal for inflammation would result in a greater number of cases of carcinoma of the appendix being discovered.

The early age at which the disease may be found is a matter of interest and importance. It has been found in a child of 12. In 24 per cent. of the cases the patients were under 20, and in 53 per cent. were under 30. It will be observed that in respect of the early age of the patients the relationship to appendicitis is very close.

The colloid type of cancer seems to predominate, and in a considerable number of cases the disease is entirely confined to the appendix. He draws the following conclusions from this study: (1) Primary carcinoma of the appendix is not so rare as hitherto supposed; (2) Appendices should be examined microscopically after removal as a routine; (3) The relationship to chronic appendicitis is intimate; (4) It tends to appear early in life; (5) It does not show a marked tendency to metastases; (6) The symptoms are the same as those of chronic appendicitis; (7) The clinical diagnosis is usually impossible.

Alexis v. Moschowitz[3] has had occasion to operate on three cases of undoubted carcinoma of the appendix during the last eighteen months, and gives illustrations of the macroscopical and microscopical appearances. The first patient, aged 37, had

[1] *J. de l'Expérience*, 1838.

[2] *Wiener med. Wchnschr.*, 1866, xvi. 863. [3] *Ann. Surg.*, 1903, xxxvii. 891.

suffered from gastric attacks, and recently from frequent severe attacks of abdominal pain, culminating in an attack of suppurative peritonitis demanding operation. The tip of the appendix showed a carcinomatous mass the size of a bean, the gastric attacks being proved to arise from benign stenosis of the pylorus.

His second case was that of a woman aged 20 with a few days' history of appendicitis, and after extirpation of the appendix it was found to contain a hard nodule of carcinoma an inch from its tip. The third case was that of a woman aged 24, five months pregnant, with hypogastric pain and tenderness most marked on the right side. On operation, the appendix presented the slight anomaly of being adherent to the iliac fossa, and the other organs were normal. The appendix contained a carcinomatous mass in its obliterated distal end.

He agrees with Dr. Elting in having found about twenty authentic cases already recorded of carcinoma of the appendix, and he concludes that it must be more frequent than supposed, notwithstanding the fact that Nothnagel and Maydl found only two cases of primary cancer of the appendix in over forty thousand autopsies. Only fourteen of the previously recorded cases are available for clinical study, and the symptoms may be classified as follows: *Pain* and *tenderness* were present in three-fourths of the cases, but any suggestion of a mass was only present in a quarter of them, and rigidity in a like number; the *temperature* and *pulse* afford no deductions of any value; *adhesions* were present in half the cases, and a history of *previous attacks of inflammation* in some 60 per cent. In this connection reference is made to the observation of Letulle and Weinberg of carcinoma in two cases of "obliterating appendicitis."[1] As regards *age*, two-thirds of the patients were below 30, the majority occurring in the second and third decades, when inflammations of the appendix are most frequent—a fact confirmed by the constant presence of inflammatory signs in a carcinomatous appendix. Females were more liable to it than males in the cases already reported.

The *pathological appearances* varied, and there was no relationship between the length of the appendix and the development of cancer. The sizes of the cancerous nodules varied from one merely microscopical to one the size of a marble; but it is well for the reader to be somewhat sceptical in the diagnosis of cancer which is nothing more than microscopical! And it was only in studying this question that the writer's attention was drawn to the work of Askanazy, "wherein he calls attention to the inflammation of the lymphatic vessels which accompany the sympathetic nerves, in inflammatory diseases of the peritoneum and intestines. We find in these cases the perineural lymph spaces more or less filled with cells, forming a picture not unlike that of a carcinoma alveolus." As to the variety, most of the examples appear to be adeno-carcinomata, the majority encap-

[1] *Arch. d. Sc. méd.*, 1897.

suled or well-defined, and in some cases, as in one described by the writer, not even involving the musculature. It is variable in position, but usually located towards the distal end. It invariably appears first in the mucous membrane, infiltrating the other coats of the appendix in succession. Some inflammation or obliteration almost always accompanies the carcinoma, and the inflammation may have led to perforation or gangrene.

Moschowitz arrives at the following conclusions, which might be compared with those of Elting already given: (1) No exact figures can be given regarding the frequency of carcinoma of the appendix: it is rare, but with increasing watchfulness more cases are likely to be discovered; (2) "Primary" carcinoma of the appendix always begins in the mucosa, and probably (3) takes origin in preceding inflammation; (4) It occurs at an early age, when inflammatory processes are more common; (5) It occurs in the female more frequently than in the male in the proportion of 3 to 1; (6) The possible advent of carcinoma is an additional argument for the removal of an inflamed appendix.

* * * * *

The Operative Treatment of Facial Paralysis.—Whether arising from traumatism during operations upon the middle ear or from other causes of inflammation of the facial nerve in the Fallopian aqueduct, it is fortunately the rule for signs of recovery from paralysis to appear within six months of the onset of the trouble. But the exceptional cases in which the paralysis remains permanent have excited more surgical interest of late from the demonstration to the hilt by Messrs. Ballance and Stewart [1] of the part played by the peripheral segment in the regeneration of divided nerves, and from the greater frequency of facial paralysis arising from life-saving operations upon the mastoid region, even when it is certain that there has been no direct injury to the nerve, and the paralysis has not appeared till some hours or days after operation.

A successful case is described and freely illustrated by Harvey Cushing,[2] the proximal end of the divided spinal accessory nerve being united to the distal end of the paralysed facial nerve, and at the time of writing—six months after suture—a condition approaching the normal had been established. The operation was undertaken from the knowledge that successful crossing of flexor and extensor nerves had occurred in experiments on animals, and that not only may co-ordination be thus re-established, but nerves originally subserving entirely different functions, as the sympathetic and pneumogastric, may be successfully crossed, as demonstrated by Langley. The operation for the relief of facial paralysis seems to have been first performed by Faure.[3] The disadvantages of this form of anastomosis are obvious, in the drooping of the shoulder with

[1] *The Healing of Nerves*, 1901. [2] *Ann. Surg.*, 1903, xxxvii. 641.
[3] *Gaz. d. Hôp.*, 1898, 259. *Vide infra.*

some atrophy of the sterno-mastoid, and in the resulting co-ordination of facial movements with those of the shoulder. Said the patient after the operation: "When I wish to laugh straight, I can help it out with my shoulder." This is on a par with the case of the lady who was compelled to keep her arm fixed when walking, lest the co-ordinate expressions of her face, as she walked along, should be mistaken in their intent. But it is probable that there may be a return of power over individual groups of muscles, isolated from movements of the shoulder; thus Cushing's patient was eventually able to close the eyes and to whistle without elevating the shoulder at the same time. The paralysis resulting from division of the spinal accessory may be obviated by grafting a slip only of the nerve into the facial, as carried out by Faure; by performing lateral implantation of the distal facial segment into the spinal accessory, as in the operation of Kennedy; or by a simple lateral union of the two nerves, as in the method adopted by Ballance.

The co-ordinate shoulder movements and the wasting of shoulder muscles, as the case may be, have led Ballance to suggest an anastomosis with the hypoglossal instead of the spinal accessory.[1] The case of Faure was anticipated by Ballance by an operation performed at St. Thomas's Hospital in 1895. The condition seven years after was interesting; for although there is still apparent flaccid facial palsy, yet the raising of the shoulder against resistance brings out marked contraction of the apparently paralysed side of the face. The conclusions arrived at in this paper are as follows: (1) Peripheral facial palsy is remediable by facio-accessory anastomosis, but the extent of the recovery appears to be limited to associated movements in conjunction with the shoulder: in most cases the previous deformity disappears when the face is at rest; (2) For these reasons facio-hypoglossal anastomosis is suggested for future use; (3) The cases suitable for operation are those in which the paralysis has lasted so long that no recovery is to be expected, say six months without any sign of recovery; (4) A suppurative causal condition producing an infective neuritis renders the prognosis after operative treatment less favourable than after trauma. One operation of facio-hypoglossal anastomosis has been already done, but it is too early to determine the results as yet. Professor Schäfer has suggested the possibility of utilising the glosso-pharyngeal, but the nerve is too small to afford a prospect of good results in practice.

T. CARWARDINE.

ELECTRO-THERAPEUTICS.

The **high-frequency electrical currents** and the X-rays up to the present have generally been classed together as similar methods of treatment; thus we find in the *Encyclopædia Medica*

[1] *Brit. M. J.*, 1903, i. 1009.

the chapter on high-frequency currents under the heading of X-rays. This is not as it should be, and the two methods should be kept distinct. Lewis Jones[1] points out that they have one feature in common, viz. the Cathode rays, and says that perhaps in the future we may prefer to talk of "treatment by Cathode rays"; but as the results of the high-frequency currents—at any rate in the treatment of general diseases—depend upon the electrical phenomena and upon the physiological effects produced, the method should be looked upon as a different mode of treatment from that of the X-rays, whose action is mainly local, and dependent on the reaction produced on the diseased part.

Unfortunately, the treatment by the high-frequency currents has become to a certain extent obnoxious to the profession, as it has been exploited by the daily press, seized upon by tradesmen running establishments for the cure of every ill that human flesh is heir to by electrical means, and has even formed part of a music hall performance in which the performer professed to cure paralysis. Small wonder, therefore, that the method should be looked at askance by some members of the profession. Still, the method is of distinct value in certain cases, and it should be investigated by properly qualified men, especially as to the class of disease in which it is useful, and its proper mode of application, dosage, etc. Above all, the remedy should be kept by practitioners in their own hands. It is not right that patients should be sent for treatment to some enterprising tradesman who has set up an X-ray installation for the purpose of taking radiograms, and has added a high-frequency apparatus to his stock-in-trade, for the remedy is one that wants watching by one who has a practical knowledge of the disease for which the treatment is applied.

Diabetes.—The marked physiological effects produced by the high-frequency currents necessarily led to their use in general diseases, such as gout, rheumatism, diabetes, etc., and the results attained up to the present, as reported by different observers, differ very much, some speaking of the treatment as most efficacious, and others that it is of little use. Thus four cases of diabetes have been recorded by Vietta and two by D'Arsonval,[2] in which the sugar either disappeared or was much reduced. Chisholm Williams[3] gives notes of a case where the patient was passing 16 pints of urine in the 24 hours, and 32·3 grains of sugar to the ounce when the treatment was commenced, but at the end of a month's treatment the urine had decreased to 7 pints, and only 3 grains of sugar per ounce. Against these favourable reports Lewis Jones,[4] quoting Dénoyés, says that the patients still remain glycosuric, and that reduction of the sugar can be obtained equally well by other electrical means, such as the electrical bath with sinusoidal current.

[1] *Practitioner*, 1903, lxx. 361. [2] *Ency. Med.*, xiii. 529.
[3] *The High-frequency Currents in the Treatment of Disease*, 1903, 159. [4] *Loc. cit.*

Apparently, therefore, reduction in the quantity of the sugar excreted in cases of diabetes is acknowledged alike by the supporters and the detractors of the treatment, and as reduction of the sugar excreted is the object aimed at in all other treatments of diabetes, surely this method is worthy of extensive trial. It certainly has the advantage over electric baths in being applied much more easily, and at infinitely less trouble to the patient.

Tubercular Disease.—Dénoyés' experimental work on guinea pigs, the details of whose work are given at length in his work on "Les Courants de haute fréquence," and whose results are quoted in most English articles on the subject, shows that the high-frequency currents have a retarding influence on the growth of the tubercle bacillus; and Rivière[1] states that "the microbe cannot resist the repeated application of these currents, its reproductive power and the virulence of its toxins being attenuated." Again, Grünbaum,[2] discussing the theory of immunity, points out that the modification from toxin to toxoid may be brought about by the high-frequency currents, and that toxoids are capable of producing immunity. In the face of such statements as these, is it too much to expect that the high-frequency currents will have a beneficial effect in the treatment of phthisis? and will they not prove a valuable adjunct to the open-air treatment of the disease? According to Chisholm Williams[3] they have such an effect, and in his lately published work he gives further information of the forty-three cases he originally recorded. Of these three have died, the three deaths being due to pneumonia, tuberculous kidney, and lardaceous disease; of the rest, thirty-two have had no treatment of any kind for eighteen months, eight cases have had on an average two months' treatment since that time, and none of them have required treatment during the past year. The majority of the patients, who were workers, are performing their usual duties. As he suggests, "when many hundreds of phthisical patients have been subjected to this method we shall be in a position to judge of its merits."

In the treatment of **malignant disease** some cases have been reported in which improvement has been obtained by the use of the currents, notably four cases reported by Dr. Allan,[4] viz. one of sarcoma of the antrum, two of recurrent scirrhus of the breast, and one of advanced epithelioma of the os uteri. All of these cases were remarkably relieved, and the disease apparently arrested. A further report of these cases is given in an appendix in Chisholm Williams's work on the high-frequency currents, stating that three of the patients were quite well two years after the treatment, whilst the fourth (epithelioma of the uterus) had died of pneumonia. Other observers have not been so fortunate in their results, the general opinion being that though patients

[1] *Brit. M. J.*, 1902, i. 93. [2] *Ibid.*, 1903, i. 654. [3] *Op. cit.*
[4] *West Lond. M. J.*, 1902, vii. 173.

are improved in their general health for the time, yet in spite of the temporary improvement the disease goes on in the usual manner to a fatal conclusion. I myself have seen one extraordinary case of great improvement in the symptoms under the use of the currents in a case of pelvic carcinoma. The patient had a mass of malignant growth in Douglas's pouch involving the rectum and vagina, which could be felt above the pubes. She had great distress in defæcation, the motions being blood-stained and only passed with the greatest difficulty, and her pain and distress were only kept under control by large doses of morphia frequently repeated. After four months' treatment with the high-frequency currents, administered by an electrode in the rectum, she lost all pain, entirely gave up the use of morphia, passed natural motions, and was apparently in perfect health, and able to live her usual life. The improvement commenced after the first few weeks of the treatment. The tumour, however, remained much as before, and probably the improvement is only for a time. However, if the chance of cure is only a remote one, still in this otherwise certainly fatal disease the remedy is worth while trying. The report by the Middlesex Hospital authorities on the subject of treatment of cancer by the high-frequency currents, X-rays, etc., is anxiously awaited by the profession.

In **chronic rheumatism** the remedy is most useful, especially in rheumatic arthritis of single joints, the pain being greatly relieved and the movements being improved. It is well known that the continuous electric current has been very useful in this class of cases, but the high-frequency currents seem to be much more effectual and the effect more lasting. In rheumatoid arthritis also it seems to improve mobility of the joints and to lessen pain.

In **chronic neuralgias**, such as the persistent neuralgia which follows an attack of herpes zoster, the remedy seems of distinct value.

It is, however, in the more **local diseases** that the high-frequency currents have their greatest use. All rectal troubles seem to be greatly benefited by the treatment, more especially fissure of the anus, and pruritus ani. The former disease is speedily cured, but probably the passage of the electrode stretching the sphincter has a good deal to do with the cure in these cases. But the relief afforded by the currents in cases of long-standing pruritus is sometimes remarkable. Thus I have known one patient say after four applications that he was more comfortable than he had been for twenty years.

In the treatment of **hæmorrhoids** the remedy is useful, but is not a specific as has been supposed. In recent cases a cure is rapidly brought about, but in chronic cases it takes a long course of treatment before any improvement is noticed. Hinsley Walker[1] seems to have been very successful in the treatment of

[1] *Brit. M. J.*, 1902, i. 93.

his cases; but Chisholm Williams[1] says that thirty applications are required before improvement is noted—his remarks "only apply to patients who from age or other cause refuse operation."

The treatment is well spoken of as a remedy in **skin diseases.** Regnier[2] says that cases of eczema readily respond to the treatment, also some cases of psoriasis. Chisholm Williams[3] notes a curious fact, that warts can be made to disappear with sparking the growth with a small-pointed electrode.

In that distressing complaint—at least to other people if not to the patient—**ozæna,** I have seen one case in which the offensive smell was entirely cured after a fortnight's application of the effleuve from a nasal electrode passed up the nostrils. The patient was a young woman of twenty, and the disease had been present since early childhood. J. TAYLOR.

Reviews of Books.

Encyclopædia Medica. Under the general editorship of D. CHALMERS WATSON, M.B., F.R.C.P. Edin. Vol. XII.—*Syphilis to Typhus Fever.* Pp. 528. 1902. Vol. XIII.—*Ulceration to Zinc Poisoning.* Pp. 584. Edinburgh: William Green and Sons. 1903.

These two volumes complete this great work. They both contain so much excellent material that it is impossible with the space at our disposal to do justice to them. Only a few of the contributions can be referred to.

Vol. XII. opens with an article on "Syphilis," by Mr. D'Arcy Power. He starts with a short historical review, in which he points out that originally "no great moral turpitude" was attached to the disease, as an early writer states that "in Rome this kind of illness is very partial to the priests, and especially the richest of them." The ordinary course and symptoms of syphilis are then well described, and treatment is given in detail. Attention can well be directed to the inunction method of administering mercury, which Mr. Power considers excellent under certain conditions, and "next in efficacy even if it do not surpass the plan of internal administration during the secondary stage of syphilis."

There are three separate articles on Therapeutics, viz. "Physical Therapeutics," by Mr. Ernest Flodin; "Serum Therapy," by Dr. William Murrell; and "Health Resorts," by Dr. Edmund Hobhouse. Mr. Flodin's article is by far the ongest of these, and occupies 57 pages, in which he describes very fully various exercises which can be carried out under

[1] *Op. cit.*, 196. [2] *Progrès Méd.*, 1902, 3 s. xv. 316. [3] *Op. cit.*, 159.

"genuine" medical advice. The article is illustrated by a large number of photographs showing the movements employed.

"Toxicology," by Dr. J. Dixon Mann, contains a vast amount of information in the 44 pages devoted to it. It is practically a *résume* of his larger work, with only a few minor differences, such as classifying carbolic acid among the corrosives and a different arrangement of "poisoning by foodstuffs." The various methods of separating and estimating the poisons are treated in a very cursory manner, and all illustrative cases are omitted from this article. This latter fact naturally makes the subject less interesting; but as everything of real importance is present and well arranged, the article should prove a useful one for ready reference in cases of necessity.

The "Thyroid" is considered both from a medical and surgical aspect. The medical portion, by Dr. G. R. Murray, is well written, and a lucid description is given of the well-known morbid conditions of this gland. Mr. Frederick Page, in the surgical part, discusses the modern surgical treatment of the same diseases, and also describes malignant and other tumours of this organ.

Fifty pages are devoted to "Tuberculosis," by Dr. Theodore Shennan, senior pathologist to the Royal Infirmary, Edinburgh, and this is certainly one of the best articles in the volume. The properties and life history of the tubercle bacillus are first described very fully, and a large number of bacilli are mentioned as occasionally found in old non-tubercular cavities and in milk, etc., from which it is impossible by the ordinary staining and cultural methods to differentiate it. The relationship of bovine and human tuberculosis is discussed in a very able manner. Dr. Shennan does not agree with Professor Koch, but considers that human tuberculosis can be transmitted to cattle, especially if the latter are weakened by disease, if the culture is made more virulent by passing it through several cattle, and lastly if sputum—a mixed infection—be used for inoculation instead of a culture. He quotes many recent experiments in support of these views. The frequency of primary tubercular infection in children from the digestive tract in this country is finally discussed, and the conclusion arrived at that milk is certainly a factor in spreading the disease.

Other valuable contributions in this volume which can only be mentioned are: "Tabes Dorsalis," by Dr. F. W. Mott; "Teeth," by Mr. G. W. Watson; "Dangerous Trades," by Dr. Thomas Oliver; "Tumours," by Mr. J. Bland Sutton, and "Typhoid Fever," by Dr. Sidney Phillips.

Vol. XIII.—In this the last volume the section on Urine is particularly good. It is divided into two portions. In the first Dr. Garrod describes the "Pathological Changes in Urine" under eighteen different headings. He discusses rather minutely the clinical significance of each morbid constituent and the abnormal variability of the ordinary ingredients. The article is

not made tedious by the details of complicated urinary analysis, but a large number of simple practical chemical tests are described, and fallacies of some of the commoner ones pointed out. "Bacteriological Examination," by Dr. Drysdale, comprises the second portion of this section. This is mostly compiled from recent observations, and the major portion of this short article deals with the presence of the bacillus typhosus in urine.

Mrs. Garrett Anderson's article on "Vaccination" is interesting reading, and the evidence adduced is overwhelming. She describes the vaccination systems in vogue in all the European countries, and tabulates results showing that the ratio of deaths from smallpox between the best vaccinated country, Germany, and Russia, where vaccination is not yet compulsory, is 1·1 to 463. At the end of her article Dr. Anderson points out that the Act of 1898 has had a tendency to increase successful vaccinations, but suggests many excellent amendments, among them being obligatory revaccinations, legally defined "efficient" vaccination, and that the Public Health Authorities be responsible for enforcement of the law.

An excellent contribution on "Plague," by Dr. Low, forms an appendix to this work. He considers inoculation by direct contact with infected material (not fleas) to be the usual manner of contracting this disease, and that men and rats are of about equal potentiality in spreading the same. "The Indian Plague Commission were of opinion that plague was carried through India from place to place by human agency," but . . . "the infection of the ports of this country may possibly occur by means of plague rats rather than by human agency, and a very much more difficult cause to prevent."

Nearly 100 pages are devoted to "Diseases of the Uterus," which are arranged in six sections written by different well-known gynæcologists. Other contributions which deserve more than passing notice are: "Uræmia," by Dr. Tirard; "Unconsciousness," by Dr. Hyslop; "Venereal Disease," by Mr. D'Arcy Power, dealing chiefly with soft sores and venereal warts; and "Water," by Dr. Thresh.

Dr. J. Mackenzie's article on "Visceral Pain" is quite one of the best in this volume, "the study of the pain and certain other associated symptoms arising from disease of the thoracic and abdominal organs" being thoroughly worked out. Attention also must be called to Dr. Dawson Turner's "X-rays, Finsen Light, and High-frequency Currents," in which the apparatus and manner of application of each is lucidly explained and the therapeutics discussed.

A Manual of Medicine. By THOMAS KIRKPATRICK MONRO, M.A., M.D. Pp. xx., 901. London: Baillière, Tindall, and Cox. 1903.

Some books are too large, some are too small, this one is considered to be the right size for the average student of

medicine and junior practitioners. It does not profess to be exhaustive, but it gives just what the student must know and should know before he goes to more voluminous monographs on special subjects.

The first section, on Specific Infectious Diseases, includes Rheumatic Fever, Tuberculosis, Lobar Pneumonia, Syphilis, and various other less common maladies, such as Dengue, Frambœsia, and other tropical diseases. The description of these is terse, but comprehensive and reliable. A compression of all the important points of these forty-one different maladies into the space of 191 pages is worthy of all commendation, and we have failed to find any serious omission or inaccuracy.

Section II., Constitutional Diseases, includes Chronic Rheumatism and Rheumatoid Arthritis, which are here associated with gout rather than with acute rheumatism. We think this is wrong, and we question if patients with rheumatic myalgia would approve of the insertion of long needles into the painful muscles as recommended by the author. A section on Diseases of the Skin, one on Animal Parasites, and a very complete index, conclude a volume which is eminently fitted for the purpose intended by the author, who is already well known to the medical reader by his *Monograph on Raynaud's Disease* and by his *History of the Chronic Degenerative Diseases of the Central Nervous System.*

On Disorders of Assimilation, Digestion, etc. By Sir Lauder Brunton, M.D., D.Sc., F.R.S. Pp. xx., 495. London: Macmillan and Co. Ltd. 1901.

The author explains that this is in a sense a second series of papers and addresses on Disorders of Digestion, and that being a collection the same ideas recur again and again. Nevertheless, the matter, even when not new, is presented in different language, and oftentimes from different standpoints, yet always with that clearness and simplicity that characterises Lauder Brunton's handling of scientific topics, and makes intricate scientific questions so attractive to the reader.

Perhaps the most useful to the practitioner will be the series of articles on Diabetes, and the Influence of Stimulants and Narcotics on Health. But every one of the many other articles is worth careful reading, and cannot fail to instruct.

Cancer and other Tumours of the Stomach. By Samuel Fenwick, M.D., and W. Soltau Fenwick, M.D. Pp. xv., 362. London: J. and A. Churchill. 1902.

This is an excellent monograph on an important subject, and every detail of it is adequately dealt with. The section on Etiology is especially interesting, as the authors adduce good evidence for some opinions that are not in accordance with

generally accepted views. Thus they give the incidence on sex as about equal, and show that "the tendency to gastric carcinoma steadily increases with each decade of life until the age of 75." They also show that the mortality from cancer of the stomach is higher in the summer than in the winter. The account of the symptomatology is clear, and gives an accurate picture of the disease, and that of the physical signs is also good. We think, however, fuller directions for the examination of the gastric contents should have been given; but the authors may perhaps have considered that as they were dealing with one variety of stomach disorder, it was not necessary to give more than those tests which are specially useful in this particular disease. A very useful section, considering the protean forms under which cancer of the stomach may appear, deals with the clinical varieties of the disease, and this has been wisely illustrated by a few well-selected, and not too lengthy, descriptions of cases. The advice upon treatment and the chance of success given by surgical interference in the different forms of the disease is distinguished by good sense and sound judgment. The second part of the work deals with Tumours of the Duodenum, Syphilis, Cysts, and Benign Tumours of the Stomach, and in this more recondite subject the authors are equally at home. Cancer of the stomach is unfortunately so frequent, and, as we have said, shows itself under such varying aspects, that it is most important that we should all be thoroughly acquainted with the subject, and in this book the practitioner will find a guide on which he can safely rely. The book is well illustrated and printed.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. CARL VON NOORDEN. Authorised American Edition. Translated under the direction of BOARDMAN REED, M.D. Part III.—*Membranous Catarrh of the Intestines* (*Colica Mucosa*). Pp. 64. New York: E. B. Treat and Company. 1903.

This little book gives a concise account of the curious and rather obscure affection known as Membranous Catarrh of the Intestines. The term colitis cannot be used for all cases, for though "colica mucosa" may be one of the signs of genuine enteritis, it may also occur without any anatomical lesion of the intestinal mucous membrane. Obstinate constipation is an important factor, but does not play the chief part, in producing it. The author considers that in addition to general hysteria or neurasthenia there is a morbid change in the secretion of mucus by the intestine; that is, an alteration in the nervous mechanism that regulates its secretion. With regard to treatment the directions are clear and definite. Prof. von Noorden, after enforcing the necessity of rest and of emptying the bowels

by enemata of hot water followed by oil as a commencement of treatment, lays stress upon the paramount importance of a suitable diet; and his experience has taught him that in place of giving a bland diet leaving little indigestible residue, one that is very coarse and contains a large amount of indigestible material, such as whole meal bread, vegetables containing much cellulose, fruit with small seeds and thick skins, in addition to large quantities of fat, should be employed. The object of this diet is to produce soft and massive stools. Massage of the large intestine is used as an adjuvant, and the object of the cure is not attained until the bowels are regularly and naturally moved without medicine. Then "the disease 'colica mucosa'" may be considered cured, and will never return."

Operative Surgery. By HERBERT WILLIAM ALLINGHAM. Pp. xiv., 367. London: Baillière, Tindall, and Cox. 1903.

This book is intended for "surgeons wishing to hastily look up the leading features of an operation, and also to those who are performing operations on the cadaver." We are aware of the difficulties in carrying out this intention, but a perusal of the book leaves some dissatisfaction from both points of view. The illustrations number over 200, and are generally good and clear, but fig. 196 is anatomically incorrect in several particulars, and fig. 199 does not correspond with the description in the text. There are several grammatical and clerical errors, *e.g.*, "jackanet," catgut in "1 in 500 carbolic solution," the "innermost" of two white lines, "Parker Symes" (Syms), and "either . . . are" (p. 357). On page 10 the flexor carpi radialis is stated to be on the inner side of the front of the wrist. Concerning the subject matter, in excising the clavicle, it is stated that the periosteum should be stripped off; and in excising the maxilla with preliminary ligature of the external carotid it would seem superfluous to perform tracheotomy and plug the pharynx as recommended. Tenotomy of the tendo-achillis is thus described (p. 95): "The patient being on his back, the foot is rotated outwards. The assistant keeping the tendon on the stretch, the knife (*sic*) is entered about an inch above the os calcis, on the inner side, and the tendon divided." The removal of half the tongue is described as accomplished by clamping the base of the tongue and ligating it in mass—a clumsy, and, we think, dangerous procedure. The horizontal incision along the clavicle in thyroidectomy (fig. 127) might be taken exception to, and also to the absence of any mention of the division of palatal muscles in staphylorrhaphy, the method of dealing with an irreducible intussusception, and the scanty description of nephrorrhaphy. We would call attention to the excellent method of subcostal opening of the pericardium described on page 222. Otherwise the book is readable, of convenient size, and will prove a useful addition to works of its class.

A Text-book of Surgical Principles and Surgical Diseases of the Face, Mouth, and Jaws, for Dental Students. By H. HORACE GRANT, M.D. Pp. 231. London: W. B. Saunders & Company. 1902.

A book which gives to dental students an outline of those pathological processes, and general surgical diseases, which every dentist should know something about, must be a useful one, and this work does clearly, though very briefly, describe them. But why should a dental surgeon be taught the nature and treatment of diseases and injuries in the region of the face, mouth, and jaw because he treats those of the teeth? Why should deformities of the nasal system, and lymphadenoma of the cervical glands be considered suitable for the dental surgeon's attention rather than a bowed tibia or a tumour of the testis? If all such subjects had been omitted and fuller details of the nature of inflammation and suppuration, and other pathological processes had been given, and the nature and complications of wounds more fully described, we think the work would be of more benefit to the dental student. We are glad to see a chapter on anæsthetics and hemorrhage, but why a method which could not be used for dental operations—spinal cocaine anæsthesia—should be described, or why nasal hemorrhage should be considered at all, we fail to see. If the examining boards in America require such knowledge of candidates the book may fulfil a most useful purpose, but we venture to think that if so, the examining boards require the student to waste his time over the study of what he will never have sufficient knowledge to turn to good account. If the dental surgeon is to be a face, mouth, and jaw surgeon, or even a mouth and jaw surgeon alone, let his title be changed, and the public will understand the kind of specialist they may consult.

International Text-book of Surgery. By American and British Authors. Edited by J. COLLINS WARREN, M.D., and A. PEARCE GOULD. Vol. II.—*Regional Surgery*. Pp. 1072. Philadelphia: W. B. Saunders & Co. 1900.

We have already reviewed the first volume of this work (p. 61), and find that the general excellence and completeness are maintained in this second volume. The illustrations, many of them photographic reproductions, are excellent, and number nearly 500. Over thirty different authors have contributed, the greater number being American. The numerous contributors in special subjects have furnished a wealth of detail in the special branches, sometimes overlapping one another; but their special knowledge tends to exceed the possibilities of acquisition by the average student, for whom the book, as a whole, seems scarcely fitted. To him multiplicity of authorship is not necessarily an advantage, and the international character of the

work involves the recognition of orthography different from our own, *e.g.* "caliber," "fiber," "goiter," a reference to authorities unfamiliar to the British student, and the allocation of different values to certain surgical procedures. It is thus curious to read in the section on the tongue that, as it were under compunction, "the Whitehead operation . . . must be described," the preference being given to a method of Kocher which the originator seems now to have abandoned. But it is perhaps more surprising that a British contributor should say that "prostatectomy should always be performed, to start with, by the suprapubic route," for the perineal route is very largely advocated in America. Or again, that suture to the periosteum of the twelfth rib, Tuffier's suggestion, should be the only method given for nephrorrhaphy. We think the description of pharyngeal adenoids and their treatment might be much improved upon. To surgeons the volume will afford much food for thought, especially the chapters by our American friends, whose practice and environment are somewhat different from our own. Such facts as that enlarged prostate scarcely ever occurs in the negro, and that noses are capable of such surgical improvement as depicted on pp. 85 to 89, are at least entertaining. The short nose may be made long to diminish the celestial snub, the large nose may be made small "to relieve melancholia," the aquiline becomes quite inviting after removal of the "bony hump," the syphilitic saddle nose may be bridged up, and the "pug nose has received more attention since John O. Roe, of Rochester, explained its etiology and pathology, and suggested operative treatment." We cordially recommend this book to surgeons.

A Text-book of Legal Medicine and Toxicology. Edited by FREDERICK PETERSON, M.D., and WALTER S. HAINES, M.D. Vol. I. Pp. 730. London: W. B. Saunders & Co. 1903.

Several works on this subject have been issued during the last few years from the English and American Press. Some of these works have been highly condensed, in supposed aid of the student for examination purposes; whilst, perhaps, others have treated some points at fuller length than usual. One or two of these works have been issued with very excellent and highly artistic illustrations, which photography and modern colour processes have enabled the authors to add to their books in a liberal way which had been previously impossible owing to the costliness of production. The present work also has some plates of this kind, but they are rather harsh in the tone of the colours used.

Vol. I. only has reached us at present. It consists of a number of separate articles written by men whose names are not only well known in America, but in some cases whose good

report has also reached us in this country. These articles are edited by Drs. Peterson and Haines, and the work is produced for the purpose of giving to the medical profession in America a fairly wide view of the subject.

Each chapter is fairly well brought up to date, and in some cases a good deal of fresh information is added. Dr. Ludvig Hektoen has a good chapter on *Post-Mortem* Examinations, which is useful, and in the form given is unusual in works of this sort. Dr. James Ewing gives, among other matter, a good *résumé* of Dr. Galton's identification by the patterns of the papillæ on the finger tips, as well as of Bertillon's system of bone measurements for the same purpose. We are surprised to find in Dr. Allen J. Smith's paper on Asphyxia no mention of death from acetylene gas, several cases having occurred from this most dangerous vapour, and its extended use makes it a matter of importance. The medico-legal aspect of Vision and "Audition" are treated by Dr. E. Jackson; and Speech Disorders by Dr. F. W. Langdon, whilst the "Stigmata of Degeneration" is usefully treated by Dr. Frederick Peterson. These last three subjects have not yet found a large place in our English text-books. Insanity, Idiocy, and Sexual Perversion occupy three chapters, the last making much too much of Dr. Krafft-Ebing's doubtful theories. There is a chapter on Inebriety, in which the subject is treated more fully than usual.

We do not think this work will displace our standard authors on the subject, but it may be found a useful book of reference in the library, especially on the newer subjects.

The Internal Secretions and the Principles of Medicine. By CHARLES E. DE M. SAJOUS, M.D. Vol. I. Pp. xxvi., 800. Philadelphia: F. A. Davis Company. 1903.

This volume, dedicated to the memory of Brown-Séquard, commences with a preface and summary of contents, from which we learn that a study of the physiology of the ductless glands leads to the conclusion that the adrenals are of overwhelming importance. The adrenal system, pictured in the frontispiece, is considered to be "directly connected with the anterior pituitary body through the solar plexus, the splanchnic nerves, and the cervico-thoracic ganglia of the sympathetic. Indeed, this diminutive organ, hardly as large as a pea, and now thought to be practically functionless, proved to be the most important organ of the body, as governing center of the adrenals, and therefore of all oxidation processes." Further, we read that "the thyroid gland, the anterior pituitary, and the adrenals were thus found to be functionally united, *i.e.* to form an autonomous system which we termed the "adrenal system." We further learn that "symptoms of infection or poisoning are all manifestations, more or less severe, of over-activity or insufficiency of the adrenal system. Indeed, the physiological

action of remedies was also traced to the anterior pituitary body, the governing center of this system." We learn also that the posterior pituitary body, far from being the insignificant vestigial organ it is generally thought to be, is found to stand second in importance only to its mate, the anterior pituitary body; indeed, it proved to be the chief functional center of the nervous system, and to be the co-center with the anterior pituitary body "in sustaining the cellular metabolism of all organs."

It is clear that these views, if adopted, must modify orthodox views in physiology and pathology most profoundly, and the whole subject requires much careful study, such as is shown in the twelve chapters of the book. In the *Monthly Cyclopædia of Practical Medicine*, March, 1903, Dr. Sajous gives an epitome of his paper read before the County Medical Society, February 25th, and published in the *Philadelphia Medical Journal* of March 7th, in which he gives an outline of his views, and concludes as follows:—"In closing, we wish to state that, since the functions of the ductless glands and of the leucocytes have been known to us, medicine has appeared in a new light. The majority of abstruse problems have become normal combinations, bereft, as they now are, of theories which before were necessary to compensate for the functions of the organs we have described."

The author has been led by his marvellous conceptions to take quite original views of the minute histology of various anatomical structures, and of the physiological processes which take place in the human body.

"Imagination is often accompanied with a somewhat irregular logic," and Dr. Sajous can hardly expect that the chain of evidence offered in this volume in support of his views will stand the strain of criticism.

Before asking the reader to accept such a mass of unorthodox views it would have been well to have first placed beyond dispute a few of the more important statements which form the very foundation of the author's arguments.

In the first place it is a *sine qua non* for Dr. Sajous' theory that the essential oxygen carrier of the blood should be the plasma and not the hæmoglobin. We know of no experimental proof of this fact. Leonard Hill and Macleod have shown that plasma is capable of absorbing a certain amount of the gas, but only that amount which should be absorbed according to Dalton's law, and that after 1½ hours.

Many experiments are necessary, such as comparing the oxygen absorbing properties of plasma from adrenalectomised animals with those of plasma from normal animals.

Moore and Biede have practically proved that the *blood* in the suprarenal veins and the inferior cava contains suprarenal secretion, but they have not shown that the *plasma* from these veins will absorb more oxygen than the plasma takes from other parts.

In chapter ix. the action of adrenalin upon heart muscle is discussed, but here again there is a lack of experimental support.

Digitalis is alleged to act on the heart, not directly, but by increasing the adrenal secretion. We are not shown, however, that the drug fails to exert its specific action when administered to animals in which the suprarenal glands have been removed or their veins ligated.

We know, moreover, that digitalis, when brought into contact with curarised heart muscle, caused the latter to contract; but as regards the action of adrenalin in similar experiments, we are awaiting the results of Professor Langley's investigations.

Again, hydrocyanic acid is supposed by Sajous to act in poisonous doses by over-stimulating, and so paralysing the suprarenals; but we fail to conceive how such sudden symptoms as those of hydrocyanic poisoning can be attributed to the mere inactivity of these structures, without which an animal can live for from two to thirteen days, as shown by Langlois.

In the second place, passing to the pituitary body, we again notice a deplorable absence of experimental corroboration of the suggestions made as to its important functions.

According to Sajous, the posterior lobe of the pituitary is the centre from which all nervous energy arises; but this is not reconcilable with the fact that Vassali's and Sacchi's cats and dogs survived, by two weeks, complete destruction of the pituitary body.

Supposing, however, that the posterior pituitary were the site of origin of all nervous energy, then all impulses would of necessity have to pass through the infundibulum in order to reach the hemispheres. But Berkley, in his exhaustive researches, has failed to show "evidence that any of the nervous elements of the infundibular lobe pass beyond its limits into the infundibulum."

In fact, the only fibres which could possibly act as conducting paths from the posterior pituitary are, according to Berkley, "shrouded in a blackened aggregation of cellular masses," and their histological origin must remain a matter of some uncertainty.

A rather unsatisfactory path for such an important traffic! The author labours hard to convince his readers that such minute processes as the dendrites and axon of the neuron, and even the mitoma of the leucocyte, are but canaliculi for the circulation of oxygen-laden plasma. We should like to see this theory proved, and we shall look for great things in the second volume.

Meanwhile the book has added a new mystery to the physiology of life, but we think it more than likely that Dr. Sajous' judgment has been seriously warped by an imaginative faculty due to abnormal activity of the posterior pituitary body.

Atlas and Epitome of Diseases of the Mouth, Pharynx and Nose. By L. GRÜNWALD, M.D. Second Edition. Edited, with additions, by JAMES E. NEWCOMB, M.D. Pp. 219. London: W. B. Saunders & Company. 1903.

We have so recently commended this excellent atlas that little requires to be said beyond reiterating our cordial welcome. It has evidently received such at the hands of the medical profession generally, seeing that within so short a space of time this enlarged and revised edition has been required. All the plates are beautifully drawn and reproduced. Most of them are exceedingly useful and instructive. A few are, we think, unnecessary, inasmuch as they depict conditions with which every practitioner must be familiar. It is, however, not an atlas only. The text is full, clear and accurate, and renders the work as a whole a very serviceable practical text-book.

Our Baby. By Mrs. J. LANGTON HEWER. Eighth Edition. Pp. viii., 154. Bristol: John Wright & Co. 1902.—The fact that this little book has reached the eighth edition in a comparatively short time shows that it supplies a want, and is appreciated by the public. The directions as to the general management of the baby are excellent, but we cannot help thinking that the chapter on "baby's illnesses" is a mistake, and that the book would have been more valuable to the general reader without it.

Annual Report of the Smithsonian Institution for the year ending June 30th, 1901.—Washington: Government Printing Office. 1902.—This volume, the first printed in the twentieth century, commences with a history of the foundation and subsequent progress of the Institution. We are proud to find that the Smithsonian Institution owes its being to an enlightened Englishman, James Smithson, at one time a vice-president of the Royal Society, who died in Genoa, in 1829, leaving his entire estate to the United States of America, "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase of and diffusion of knowledge among men." After ten years of debate Congress accepted the trust, and created by enactment, an establishment called by the name of the Smithsonian Institution, to be governed by a board of Regents responsible to Congress. The first meeting of the Regents took place in 1846. Its first work consisted, in the main, of the publication of original memoirs, and their free distribution to important libraries throughout the world; giving popular lectures, stimulating scientific work by providing apparatus, and by making money grants to worthy investigators, etc. Gradually out of the collections which had been kept in the Patent Office, the private collection of Smithson, etc., there grew up a Smithsonian Museum, which has since

developed into the United States National Museum, which is now "the foremost collection in the world in everything that relates to the natural history, ethnology, geology, paleontology of that portion of North America now the United States." In the course of years a large library of 150,000 volumes has been formed, the major portion of which has been deposited in the Library of Congress. Other work which has been entrusted to the Institution is the Bureau of American Ethnology, the Astrophysical Observatory, and the National Zoological Park. "The establishment of the latter was intended primarily to preserve the vanishing races of mammals on the North American Continent; but it has also assumed the general features of a zoological park, affording the naturalist the opportunity to study the habits of animals at close range." Of the value of this park to students of natural history we have testimony in the interesting paper, in the latter part of the volume, by E. T. Seton, on "A Study of Animals in relation to their Natural Environment." Of the catholicity of the aims of the Institution we have ample proof, when we find that a "Children's Room" has lately been provided in the Smithsonian Building, in which has been arranged a natural history exhibition "for the especial benefit of children, little children, who did not care for long, hard names, and who could not see objects on high shelves." The rest of the volume is taken up as usual with a valuable collection of monographs by the best-known scientific experts in the world. These include papers by Lord Kelvin, on "Ether and Gravitational Matter Through Space"; on "Bodies Smaller than Atoms," by J. J. Thompson; "Wireless Telegraphy," by G. Marconi, etc. Popular tastes are also catered for, as there is an account of Santos Dumont circling the Eiffel Tower in his air-ship, and also an account of the Paris to Berlin automobile race. As is always the case in these reports, the volume is profusely and beautifully illustrated.

Medico-Chirurgical Transactions. Vol. LXXXV. London: Longmans, Green, & Co. 1902.—One of the most noteworthy papers in this volume is that on malignant endocarditis, by Drs. Poynton and Paine. They show that there is a group of cases of malignant endocarditis which is rheumatic in nature, and due to a diplococcus rheumaticus; that a diplococcus isolated from certain cases of malignant endocarditis in man will produce, not only malignant endocarditis in rabbits, but a condition indistinguishable from the disease they believe to be rheumatic fever; and, further, that by these diplococci every grade of valvulitis, from simple to malignant and from malignant to simple, can be produced. These researches appear to establish two most important points—the first of which is, that rheumatic fever must be an organismal disease due to a specific diplococcus; and the second is, that this same rheumatic microbe is capable of producing in rabbits either simple rheumatic fever or malig nant endocarditis, or both.

Transactions of the Association of American Physicians. Vol. XVII. Philadelphia. 1902.—Of the many noteworthy papers here printed, one on pneumococcic arthritis is of especial interest: the author, Dr. Herrick, gives an epitome of the literature of this condition, and sums up its clinical characteristics; he points out that exploratory aspiration is the only means of ascertaining the nature of the joint lesion, and that incision and drainage are usually necessary. In connection with pneumonia, a paper by Dr. William Travis Howard, jun., gives an interesting review of the pathology of labial and nasal herpes, and of herpes of the body occurring in acute croupous pneumonia, and their relation to the so-called herpes zoster.

Transactions of the American Dermatological Association, 1901. New York: Rooney & Otten Printing Co. 1902.—The statistics of a large number of cases are always interesting; and 22,455, although rather less than last year, give very fair data. Sixteen cases of "acanthus nigricans" are reported from New York, 171 dermatitis epidemica (Savill), two pemphigus vegetans, two pityriasis rubra (relatively small), and four of urticaria pigmentosa. There is nothing special to remark about the presidential address, by Dr. F. J. Shepherd (Montreal). During a discussion which followed the exhibition of twenty-six lantern slides, showing the clinical features and histo-pathology of small-pox, by Dr. S. Politzer, of New York, several members related cases of the unvaccinated disease which were of a mild type, and which tend to make the diagnosis of the complaint more complicated than ever. Thirty-six pages are devoted to some very interesting papers and discussions on "Diseases of the Nails." Cases were related of leucopathia nigricans, which were associated with alopecia areata, both which seemed to have had their starting point in neurotic depression. Some interesting evidence was produced, showing that psoriasis of the nails was relatively more frequent than eczema of the same; but, of course, eczema (general or local) is much more frequent than psoriasis, in the ratio of about 10 to 1. Dr. Montgomery (San Francisco) traces the streaking of the skin in "nævus linearis" to developments of the fœtus when the embryonic layers are still a plastic mass. Dr. W. A. Pusey (Chicago) extols the use of the X-rays in the treatment of many additional skin affections. The *Transactions* are well got up, and are very carefully indexed.

The Commemoration Volume of the Epidemiological Society, containing an Account of the Foundation of the Society and an Index of the Papers read at its Meetings. 1902.—Along with the *Transactions of the Epidemiological Society for 1902*, we have received the above volume, which gives a most interesting account of the foundation of the Society and of the valuable work it has done for the community at large during the last half-century. Perhaps the most celebrated work achieved was

the report of the committee "On the state of Small-pox in England and Wales and other Countries" presented to Parliament, and ordered to be printed by the House of Commons in 1855, which is described by the writer of the history as "almost epoch-making." Reading this little book, one cannot but be struck most forcibly with the enormous difference fifty years has made in our knowledge of sanitary science.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series. Vol. VII., Hernia—Inquiry. Washington: Government Printing Office. 1902. Pp. 1,003.—The present volume of this invaluable and monumental work contains 6,225 author-titles, 13,179 subject-titles of separate books and pamphlets, and 32,522 titles of articles in periodicals. It is absolutely indispensable to all medical libraries.

The Journal of Tuberculosis. Edited by KARL VON RUCK and SILVIO VON RUCK. Vol. V. No. 1. January, 1903. Asheville, N.C.: A. H. McQuilkin.—This is a quarterly magazine devoted to the prevention and treatment of tuberculosis. The relations between human and bovine tuberculosis are the subject of a paper by Professor Baumgarten, of Tübingen, and the address of Dr. Robert Koch, delivered at the international conference in Berlin, on "The Transmission of Bovine Tuberculosis to Man," is reproduced. Other abstracts on this subject are here found, and an editorial article gives a judicious summary of the evidence now obtainable. The editor is a well-known and enthusiastic student of everything relating to tubercle, and we are glad to include this journal in our exchange list.

Medical Annual, 1903. Bristol: John Wright & Co.—The twenty-first volume of this useful annual does not differ notably from its predecessors, nor does the list of its contributors. A general summary of the year's work by Dr. Hobart Amory Hare commences the "Dictionary of Materia Medica and Therapeutics" (Part I.), and the "Dictionary of Treatment." Part II. similarly commences with a general review of medical and surgical progress for 1902. Of the many useful lists contained in the book, that of sanatoria for the treatment of tuberculosis will be much in demand. X-rays, high-frequency currents and light treatment are much in evidence throughout the volume, and much is expected from these agents at present: we read that "too often, in the past, electrical treatment has suffered from over-enthusiasm, and it would be a matter for serious regret were anything to occur which would bring on the inevitable reaction in thought."

The Nurse in Hot Climates. By EDWARD HENDERSON M.D. Pp. 47. London: The Scientific Press Ltd. 1903.—This little work of 47 pages has been revised and reprinted from *The Hospital*. Any nurse who contemplates a new experience in a hot climate would be wise to study its pages closely, as it contains much instruction and good common sense. The

difference in the details of nursing in London and Calcutta must be considerable, but any English trained nurse would soon master these differences by the aid of this guide.

Tropical Diseases. By PATRICK MANSON, C.M.G., M.D. New and Revised [Third] Edition. Pp. xxiv., 756. London: Cassell and Company, Limited. 1903.—We are not surprised to see the issue of a third edition of this most excellent manual. In these days of rapid advance in all branches of medical science the publication of each new edition of a text-book means an increase in its size, and although there has necessarily been an addition of seventy pages to this edition, the book still keeps to its handy form, and as a concise and practical guide to medical men practising in tropical countries its merits are undoubted, and our former opinions of the work are fully maintained. The subject of malaria is gone into very fully, and we notice the addition of many useful plates to illustrate the anatomy and development of the mosquito which will enable observers who have the means at their command to distinguish the various forms of the insect that are now of such interest to the pathologist. The author acknowledges the good work done by the schools of tropical medicine, and gives an account of the recent experiments of American and other observers as to the part played by a species of mosquito in the spread of yellow fever. These researches explain, in Dr. Manson's opinion, many facts as to infectivity and period of incubation which were before obscure. The chapters on animal parasites and their associated diseases are especially good and instructive—the description of the life history and best methods of demonstrating their presence in the blood or tissues will be of great value to practitioners. Particular stress is laid on the possibility of the anæmia due to ankylostomiasis being overlooked or attributed to other causes—a practical point which should be kept in mind. In connection with this subject it is also shown that the embryo of A. Duodenale may gain admission into the system through the skin, a fact observed first as the result of an accident, and subsequently verified by experiment. Of filariasis the author gives a very complete account. It is a subject full of interest. He recognises four different species of the parasite as infecting man, and in a careful summing up gives his reasons for regarding elephantiasis as a filarial disease. In our opinion the book is a most valuable one, and we can only repeat what we expressed in a former review of it, that it should be in the possession of all medical men whose practice lies in tropical countries. A very complete index adds much to its value.

Muco-membranous Colitis. By Dr. FROUSSARD. Pp. 15. London: Baillière, Tindall and Cox. 1903.—A short essay on this intractable malady concludes with the statement that "very often this disease is greatly improved by a water cure. In France, Plombières and Chatel-guyon are the two places where

it is treated with the greatest success. Plombières is especially recommended for the cases which are very painful and accompanied by aggravated intestinal cramps and other nervous symptoms." We can but welcome any suggestion which gives a chance of cure in a chronic case of this most unsatisfactory disease.

Transactions of the College of Physicians of Philadelphia. Vol. XXIV. Philadelphia: William J. Dornan. 1902.—A notable feature of this volume is its series of obituary notices of men who are worthy to be remembered. That of Dr. J. M. DaCosta, the author of the well-known book on *Medical Diagnosis*, is written by Dr. J. C. Wilson; that of Dr. John Ashhurst, jun., by Dr. Richard H. Harte, who concludes as follows:—"To know John Ashhurst was to respect him; to secure the privilege of his friendship was to love and revere him with a love and reverence seldom given to mortals to obtain." The notice of Dr. Alfred Stillé is written by Dr. William Osler, who remarks "that the physician of the last century, whose 'floruit' came in the fourth, fifth, and sixth decades, is of all men the most to be envied. Coming out of the wilderness in which we had wandered for two thousand years, he entered the promised land, and under the leadership of Laennec and Louis, of Skoda and of Virchow, he saw the heathen dispossessed and the profession at last enter upon a heritage of scientific medicine. Of such was Dr. Stillé, who, born in 1815, began his life work with the generation which saw the new pathology and the new clinical methods. Dr. George C. Harlan writes of Dr. William Fisher Norris that "he filled a conspicuous position in the medical profession of Philadelphia faithfully and well, and will long be remembered and honoured in its history."

The Treatment of Fractures. By CHARLES LOCKE SCUDDER, M.D. Third Edition. Pp. 485. London: W. B. Saunders & Company. 1902.—This is a useful book. The most striking feature about it is its wealth of illustrations in connection both with the diagnosis and treatment of fractures. They are very clear, and the majority are of much practical value. A few skiagrams are reproduced, and there are many pictures made from skiagrams, but they are, as the preface states, "the combined interpretation of the plate made by skilled observers who were in every instance familiar with the clinical aspect of the case." This looks as if they were somewhat imaginative drawings. We had rather expected in this new edition to find a chapter devoted to the question of early movement and massage in fractures, as it has been so prominently before the profession, in this country at any rate, but a chapter has been devoted to the ambulatory treatment of fractures. The author is not in favour of this method. An interesting account is also given of the use of the X-rays for diagnosis and the interpretation of skiagrams, and

the views expressed by the American Surgical Association on the medico-legal aspect of X-ray work are given in full. It seems curious to English readers to find that all fractures of the neck of the femur are treated of together, irrespective of their position, and to read that whether the fracture is intra or extra-capsular is of little moment. The author has endeavoured to find a term which is a little more expressive of the condition met with in what are termed simple and compound fractures. The term open fracture, proposed as a substitute for compound, is a good enough one, but to call the other variety a "closed" fracture rather suggests that it has been closed by the surgeon. We must confess, however, that no really suitable term occurs to us. We are advised by the author not to operate for fractured patella without fully explaining the risks to the patient, and never unless we are skilled in antiseptic methods, and this is, of course, very sound advice. We look in vain for descriptions of the various methods of operating employed in this country. Mr. Barker's well-known plan is not even alluded to. We entirely agree with the author in not advising operation in the ordinary form of fracture-dislocation of the spine. The amount of writing in the book is perhaps not so great as one might imagine from its size, as the print is large, and the very numerous pictures take up much room. It is a thoroughly practical work.

The Surgical Treatment of Ulcer of the Stomach. By C. MANSELL MOULLIN, M.D. Pp. 53. London: John Bale, Sons & Danielsson, Ltd. 1902.—This collection of papers, which does not mean to be a treatise on gastric ulcer, will be found useful to the physician as well as to the operating surgeon, as it puts in a concise form the special symptoms and physical signs to be looked for in cases requiring operative treatment, and it also gives shortly the choice and the mode of operation required. We quite agree with the author when he says that "if only properly selected cases of ulcer of the stomach were treated surgically, before the condition of the patient has been allowed to become hopeless, many lives that are now sacrificed would be saved, and an enormous amount of pain and suffering would be prevented."

Tumours, Innocent and Malignant. By J. BLAND-SUTTON. Third Edition. Pp. xii., 556. Cassell & Company, Ltd. 1903.—The present edition of this extremely interesting and valuable book contains some important additions in the text and figures. The author has wisely dissociated the old "myeloid sarcoma" from the sarcomata, under the more appropriate name of "myeloma," and "deciduoma malignum" has been provisionally placed amongst the sarcomata. The term "epithelioma" has been replaced by that of "squamous-celled cancer"—a phrase which is pathologically more correct, though more alarming to the sufferers from this disease. Two of the most interesting

chapters of the newer additions are those treating of renal and adrenal tumours and of uterine myo-fibromata. The evil effects of pregnancy and the dangers which may ensue after the menopause in patients affected with myo-fibromata are clearly set forth. The painstaking labours of the author have already become classical, and this third edition has brought them up to the knowledge of the present day. The classification is sound, the descriptions clear, and the illustrations are numerous, helpful, and well executed.

Saunders' Year Book of Medicine and Surgery. Under the general editorial charge of GEORGE GOULD. *Surgery*. Pp. 671. London: W. B. Saunders & Company. 1903. Only one-half of the book is devoted to general surgery, the other portion being devoted to obstetrics, gynecology, orthopedic surgery, ophthalmology, diseases of the nose, throat and ear, and anatomy. The existence of such books is a necessity for those who find it impossible to wade through the voluminous literature which appears nowadays on all professional subjects. The author has been ably helped by well-known specialists in the various departments; and the present volume is worthy of its predecessors and one of the best of the numerous "annuals."

Anleitung zur Diagnose und Therapie der Kehlkopf-, Nasen- und Ohrenkrankheiten. Vorlesungen gehalten in Fortbildungscursen für practische Aerzte. Von RICHARD KAYSER. Zweite vermehrte und verbesserte Auflage. Pp. vi., 178. Berlin: S. Karger. 1903. —The account given of the diagnosis and treatment of the affections of the nose, throat and ear in this little book is concise and practical. In 170 pages all the most important affections of these regions are described and the appropriate treatment for each outlined. We consider the book an ideal one of its kind. We have noticed no omissions of importance, and no insertions which could have been omitted with advantage. It would be an excellent thing if every medical student or general practitioner could be induced to read, mark, learn, and inwardly digest the contents of this or some such compendium dealing with this branch of the healing art. The book is not intended for specialists, but for those who have neither the time nor the opportunity for studying encyclopædic works on the subjects dealt with. We accordingly find special stress laid upon those methods of diagnosis and treatment which every practitioner should be prepared to carry out. That the book has been well received is shown by the fact that a second edition has been so soon called for. In this second edition we note that many of the newest methods of diagnosis and treatment are alluded to; for example, the use of Killian's specula, of Grey's solution of cocaine in aniline oil and alcohol, and of gelatine for the arrest of epistaxis. The book is, moreover, agreeably written and sufficiently illustrated.

Editorial Notes.

British Medical Association. — The 1903 Meeting of the British Medical Association at Swansea was smaller in numbers than many of those of previous years, but was none the less a very successful one. It will be remembered as the first meeting under the new Rules of the Association, in accordance with which there were several innovations, the most important being the transference of a part of the business of the Association to a body of Representatives elected by the Branches. There can be no doubt that it is a great advantage to the Association to have its business matters carefully debated by a large body of elected delegates, and not to be liable to have important matters decided haphazard by a snatch vote in an almost empty room under the misnomer of a General Meeting.

The way in which the Representatives' Meeting was conducted must be considered highly successful, and certainly has so far justified the anticipations of the reformers. A good deal of time was necessarily occupied at a first meeting in settling the rules of procedure for this and future meetings, but after this several matters of general importance were considered. The newly constituted Medico-Political and Ethical Committees were directed to inquire into the conditions of contract practice, and it is to be hoped that some practical method of dealing with this matter will be the outcome; the support of the Association was rightly promised to the Irish Poor Law Doctors in their struggle for a "living wage"; and further, a proposal, the issue of which is more doubtful, to form a Committee for Scotland was accepted. The meeting was thoroughly business-like, and whilst the matters brought before it were adequately discussed, those members who came prepared to give a display of their oratorical powers soon found that unless they kept to the point their efforts were in vain. Too great credit for the success of this meeting can hardly be given

to the Chairman, Sir Victor Horsley; that so much business was got through so well is chiefly due to his able management of the meeting. It may be well to say that the Representatives *were* representative of the Branches, and comprised many well-known members of the Association, amongst others the President-elect, Dr. W. Collier.

The sections were very fairly attended, but no doubt the numerous excursions provided and the delightful surroundings of Swansea furnished many members with an excuse for a not too exhausting devotion to the scientific side of the meeting. The rooms in which the sections were held were not large, but were conveniently grouped together. The Pathological Museum deserves more than the passing word of notice which we are only able to give it. Though moderate in size, a most interesting set of specimens, chiefly macroscopical, had been collected; these were capitally arranged, so that what was in the museum could really be seen and studied—which is by no means always the case in these annual shows—and the general arrangements reflected great credit on the organisers, who are to be congratulated on the result of their by no means light labours.

As said above, Swansea lies in the midst of very beautiful surroundings, which are easily accessible by train, tram and water. Though ugly in itself, the town has a fine situation on the shore of its beautiful bay. For its size the town is singularly deficient in good buildings—there is hardly one of any consideration; this is a serious defect in entertaining such a large body as the British Medical Association, and the local committees deserve all the more credit for the success of their arrangements. The entertainments and excursions were well arranged, and so far as one could judge much enjoyed by the members present, who took full advantage of them. The feature that will perhaps most linger in the memory is that one could be on the seaside by a beautiful stretch of sands and within easy access of lovely coast scenery whilst still within the confines of a grimy and not attractive commercial city. We think that the members who were at the meeting will look back to it with pleasure, and with gratitude to the genial president and to the local committee for the very agreeable week which they owe to their efforts.

The Medical Defence Union.—The Annual Report for 1902 shows that the increase of membership has beaten any previous record. The medical profession appears to have now realised the importance of practically insuring against attacks which very often are made upon its members by unscrupulous persons, and the value of being defended in such attacks by an impersonal association is very fully acknowledged. The number of members on the register is 5,549, of whom 896 have been added during the year. It appears to be the duty of every member of the profession to join such a union as this, as no one of us can say how soon its assistance may be urgently needed, and the British Medical Association does not as yet seem prepared to undertake so large and important a responsibility.

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Bovine Tuberculosis.—The questions relating to this subject are still much discussed, and further evidence is desired. The Royal Commission on Tuberculosis is collecting statistics, and has asked Dr. Odery Symes to collect evidence from this district. He will be glad to receive particulars of any case of abdominal tubercle verified by *post-mortem* examination, and attend or, if necessary, perform such examination. Dr. Symes is also desirous of obtaining information bearing upon the subject of the transmission of tubercle by means of food, and the relation of certain employments to tuberculosis.

Notes on Preparations for the Sick.

Manganese Citrate; Manganese and Iron Citrate; Manganese and Iron Phosphate.—BURROUGHS, WELLCOME & Co., London.—Manganese has long had a reputation in the treatment of debilitated conditions associated with anæmia, but the preparation known as manganese dioxide, in the insoluble form, has been the only one available. The above preparations are all in the form of scales, which are freely soluble in water. The citrate contains 12 per cent. of manganese, and the other preparations contain 7 per cent. in combination with 14 per cent. of iron. They are also prepared in tabloid forms, each having three or five grains.

Tabloid: Quinine Salicylate, gr. j.—This drug is also prepared in a tabloid dose of three grains. Their convenience and value are obvious.

Soloid: Romanowsky stain (Leishman's powder).—These soloids have been found to answer their purpose well, and are always ready for use when required.

Purgen is a new synthetically prepared purgative, having the composition indicated by the compound name of dihydroxyphthalophenone. The discovery of the action of this substance is due to the conjoint work of chemists and pharmacologists. For a long time the attention of pharmacological chemists has been directed to the chemical nature of the purgative principles of the naturally occurring aperients such as aloes, rhubarb, etc. These researches culminated in the discovery that the essential purgative principle was glucosidal in nature, and that the purgative glucosides, although differing slightly *inter se*, all yielded, upon appropriate chemical treatment, an anthraquinone derivative, and that further this anthraquinone derivative when administered to men produced a purgative effect. A number of these anthraquinone derivatives have been tested pharmacologically, and certainly possess, as compared with the older purgatives, all those advantages appertaining to a pure chemical substance in contradistinction to a crude mixture of inconstant composition.

Purgen has a pleasant taste, is constant in action, it causes painless evacuation of the bowels, and is only very slightly absorbed; it therefore gives rise to no secondary irritative effects, and does not change the colour of the urine. It is prepared in tablets of different doses from gr. $\frac{3}{4}$ to gr. viiss. The agents for this country are Messrs. Kirby & Co., London.

Laxoin.—This is the same chemical compound prepared in palatinoid form (gr. ij.), No. 200, by Messrs. Oppenheimer, Son & Co., London.

Selama Water.—142 Gray's Inn Road, London.—In Northern Africa, close to the Mediterranean shore, the famous Selama Artesian spring was discovered accidentally a short time ago. When boring for petroleum the tool struck a powerful water vein at a depth of 900 feet. Highly mineralised, warm and beautifully clear, the carbonic acid gas mixed with the water causes it to rise in a sparkling jet to a varying height of 12 to 50 feet above the surface ground.

This water, when oxygenised, is called Icilma, and is used in the manufacture of Selama Soaps, and of Icilma Fluor Cream. These preparations are believed to have a remarkably sedative effect in all conditions of irritation of the skin.

An analysis by Mr. Oliver Davis, B.Sc., shows that the water contains calcium carbonate ($Ca\ Co_3$) dissolved by carbon dioxide (Co_2). It contains also magnesium and calcium sulphate, with sodium chloride, and traces of iron and alumina.

If all which is said of this water is verified by further experience, we shall have at our command another potent Bethesda, which can be brought within the reach of all who need healing waters.

"Velvril" Film Dressing.—THOS. CHRISTY & Co., London, E.C.—This consists of a yellow flexible material applied over a wound which has been washed with acetone and wetted with "velvril" solution. The advantage claimed is that it enables the wound to be looked at through the film. As it is desirable, however, to apply an aseptic dressing over the velvril, and as we practically never want to look at a wound until it is necessary to change the dressing, the usefulness of the material seems doubtful, in the larger wounds at all events.

For smaller wounds—to take the place of collodion—where no dressings are required, it has perhaps a greater sphere of usefulness, for it sticks to the wound closely and well.

It might also take the place of oiled silk as a protective agent without being tightly fixed to the wound.

Mennen's Borated Talcum Toilet Powder.—11 Queen Victoria Street, London.—This is a sterilised powder, composed of magnesium silicate and boracic acid. It appears to be a soft and agreeable powder, possessing all the qualities necessary for toilet purposes, both for infants and for adults afflicted with abnormal irritation from any external causes. It is also an excellent tooth powder. Analysis (Oliver C. M. Davis, B.Sc.) shows it to be a fine powder, delicately perfumed, consisting of magnesium silicate and boracic acid, with no starch or any other deleterious ingredient.

Isarol.—REBMAN, Limited, London.—Is a dark brown viscous liquid of aromatic odour, soluble in water, and easily miscible with fats. It appears to have qualities resembling those of Ichthyol, and is obtained from certain bituminous Alpine schists.

Professor Eggar's report states that Isarol is absolutely identical therapeutically with Ichthyol, and chemically it is the ammonium sulphoichthyolicum of the Swiss pharmocopeia.

Maltico: an infants' food prepared from milk and extracts of various nutritive malted cereals. — TAYLOR & SONS, Portsmouth.—It has been found to contain a large amount of proteid nourishment, with maltose, dextrine, and fat. Its ash forms a milk-like emulsion with water, and contains phosphates. Mr. Oliver Davis's analysis shows that the food does not contain any starch. It should be therefore a safe and valuable food for early life.

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the List in June :

August 31st, 1903.

C. Elliott, M.D. (1) ... ... 37 volumes.
James Fawn and Son (2) ... ... 7 ,,
R. Shingleton Smith, M.D. (3) ... ... 1 volume.
Rhode Island Medical Society (4) ... ... 1 ,,

FORTY-NINTH LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors, and show by whom the volumes were presented. The books to which no such figures are attached have either been bought from the Library Fund or received through the *Journal*.

Albinus, B. S. ... *Explicatio Tabularum anatomicarum B. Eustachii* (1) 1744
Andrewes, F. W. *Lessons in Disinfection and Sterilisation* 1903
Armstrong and J. E. Harburn, W. *Buxton* 1903
Beaney, J. G. ... *Contributions to Conservative Surgery* ... ... (2) 1859
Bell, J. ... ... *The Principles of Surgery* (2). New Ed. by C. Bell. 4 vols. 1826
Burdett, Sir H. ... *The Medical Attendance of Londoners* 1903
Caldwell, W. A. Pusey and E. W. *The Röntgen Rays in Therapeutics and Diagnosis* 1903
Carter and A. H. Cheatle, R. B. *Sight and Hearing in Childhood* ... ... [N.D.]
Cheatle, R. B. Carter and A. H. *Sight and Hearing in Childhood* ... ... [N.D.]
Dowse, T. S. ... *Lectures on Massage and Electricity* ... ... 4th Ed. 1903
Encyclopædia Medica. (Ed. by C. Watson). Vols. XII., XIII. 1903
Harburn, W. Armstrong and J. E. *Buxton* 1903
Harty, W. ... ... *An Historic Sketch of the Contagious Fever in Ireland, 1817-19* ... ... (1) 1820
Herschell, G. ... *Manual of Intragastric Technique* 1903
,, ... *Polyphase Currents in Electrotherapy* 1903
Hewlett, R. T. ... *Serum Therapy* 1903
Higgins, C. ... ... *Ophthalmic Practice.* (Ed. by A. W. Ormond.) 2nd Ed. 1903
Hooper, R. ... ... *Lexicon Medicum; or, Medical Dictionary.* (1) 8th Ed. 1848
Jahr [G. H. G.] ... *New Manual of Homœopathic Medicine.* (2) 3rd American Ed. 2 vols. 1850-51
Maddock, A. B. ... *Pulmonary Consumption* ... ... (1) 5th Ed. 1854
Magennis, E. ... *Eye Symptoms as Aids in Diagnosis* 1903
Monro, T. K. ... *Manual of Medicine* 1903

Palmer, Margaret D. *Massage* ... ... 2nd Ed. 1903
Parsons, J. H. ... *The Ocular Circulation* 1903
Pusey and E. W. Caldwell, W. A. *The Röntgen Rays in Therapeutics and Diagnosis* 1903
Sinclair, W. J. ... *The Midwives Act*, 1902 1903
Startin, J. [Ed.] *A Pharmacopœia for Diseases of the Skin* ... 5th Ed. 1903
Stevens, A. A. ... *Modern Materia Medica and Therapeutics* ... 3rd Ed. 1903
Sutton, J. B. ... *Tumours, Innocent and Malignant*... ... ... 3rd Ed. 1903

TRANSACTIONS, REPORTS, JOURNALS, &c.

American Journal of the Medical Sciences, The... ... (3) Vol. CXXIV. 1902
American Practitioner and News ... ... Vols. XXXIII., XXXIV. 1902
Annali di Ostetricia e Ginecologia... 1902
Archivio di Ortopedia 1902
Birmingham Medical Review, The ... ... Vols. LI., LII. 1902
Bristol Health Report for 1902 1903
College of Physicians of Philadelphia, Transactions of the Vol. XXIV. 1902
Edinburgh Medical Journal, The ... ... N.S., Vol. XIII. 1903
Hospital, The ... ... Vol. XXXIII. 1903
Hospitals—
St. Bartholomew's Hospital—Statistical Tables, 1902 1903
St. Thomas's Hospital Reports ... ... Vol. XXX. 1903
Journal of the Sanitary Institute ... ... Vol. XXIII. 1902
Laryngoscope, The ... ... Vol. XII. 1902
Library, The ... ... Vol. III. 1902
Library Association Record, The ... ... Vols. III., IV. 1901-02
Louisville Monthly Journal, The ... ... Vol. IX. 1902-03
Medical Chronicle, The ... ... 4th Ser., Vol. IV. 1902-03
Nordischen Kongresses für innere Medizin, Verhandlungen des Vierten, 1902 1903
Northumberland and Durham Medical Journal, The 1902
Obstetrical Transactions ... ... Vol. XLIV. 1902
Philadelphia County Medical Society, Proceedings of the Vol. XXIII. 1902
Practitioner, The ... ... Vol. LXIX. 1902
Rhode Island Medical Society, Transactions of the (4) Vol. VI., Part 4 1903
Treatment ... ... Vol. VI. 1903
University of Penna. Medical Bulletin ... ... Vol. XV. 1903

Obituary Notices.

PETER CHESTER CHADWICK,

One of the oldest practitioners in the West of England, and one who was widely known and much respected, was born in June, 1811, and died in June of this year: he was accordingly

92 years of age, and had been a qualified practitioner for the long period of 68 years. He was the son of J. W. Chadwick, solicitor, of Long Ashton, was educated at Taunton College School under Dr. Follett, father of the late Rector of Winscombe. He was apprenticed at the age of 16 to Messrs. Flower and Leach, of Chilcompton, with whom he worked for five years before commencing his student's course at St. Bartholomew's Hospital. After receiving his diplomas, he became House Surgeon at his hospital for a period of eighteen months: afterwards he practised for a very short time at Portishead, and then in 1837 he commenced his life's work at Wrington. This he carried out with unremitting zeal for a period of fifty years, and the only holiday he ever took was his wedding tour.

Few of his contemporaries survive, but his most notable characteristics will be remembered by those who do: he was a good Latin scholar, and was devoted to his work. He was neat, methodical and orderly in all his arrangements of work and time: his iron constitution and his abstemious life enabled him to manifest untiring industry, and so he won the devotion of several generations of patients who were born with his assistance and who died under his observation. His fondness of children, an inherited Irishman's love for a good horse, and his ability to use plain and emphatic language when occasion required, are qualities which to some extent account for his great popularity with the working classes and the poor.

He had a great regard for his college friends, Sir James Paget and Sir George Burrows, and he used to tell a good story of the early uses of potassic iodide: "We will give the patient the new drug," said the doctor, but "a little blue pill as well."

In his later years he was still devoted to hunting pursuits, and many members of the Stanton Drew and Wells Harriers showed their regard for him by attending his funeral. He was a widower, and left one daughter, the wife of the Rev. Noel Lucas, Rector of Dolberrow, Somerset.

ALBERT FRY.

We regret that the occasion has arisen for comment upon the death of Mr. Albert Fry, who was for nearly twenty years Chairman of the Council of Bristol University College. He died at his residence in Clifton on April 22nd, 1903, in his 72nd year. Although Mr. Fry had been in failing health for several months, he continued to preside over the meetings of the Council and the local Executive Committee until a short time before his death. Mr. Fry was by profession an engineer, and for many years Managing Director of the Bristol Wagon and Carriage Company. He possessed a large and varied

experience of men and things, great business experience and capacity, and a sound and singularly impartial judgment. He was in many ways an important citizen; but we confine our remarks to his connection with University College, and it would be difficult to over-estimate the value of the services he rendered to this Institution. Mr. Fry was an ideal Chairman of the Council. His good influence made itself felt in every department of the College, and was a great factor in producing that harmonious working of the complex organization which is so essential to the progress and prosperity of such an Institution.

During Mr. Fry's tenure of office the College had considerably increased in size and importance; he had the satisfaction of seeing the Engineering wing, the new Medical buildings and the large Hall and Library begun and completed, and but for lack of the necessary funds the whole building as originally contemplated would have been finished—no mean feat when the pecuniary difficulties under which the College has always laboured are considered, and which were overcome so far as they have been overcome by, in large part, the energy and influence of Mr. Fry.

Mr. Fry always took a deep interest in the Medical Department of the College, was one of the governing body of the Medical School from the year 1882, when he succeeded Mr. Nonus Budd, down to the incorporation of the Medical School with the College in 1892. When the new Medical Wing was in course of construction, he gave in many ways much valuable assistance with the plans, besides being a generous contributor to the Building Fund.

Local Medical Notes.

University College, Bristol.—In the May examination for the F.R.C.S. Eng. diploma Messrs. R. F. Moorshead, M.B, B.S., and H. S. Jenkins, M.B., were successful. The following gentlemen have passed the primary F.R.C.S. examination: Messrs. W. J. H. Pinniger, M. H. Phillips, and C. F. Walters.

Mr. A. Coleridge has been appointed Assistant Resident Medical Officer to the North London Hospital for Consumption, Hampstead.

University of London.—At the M.B. Intermediate Examination the following have passed in the second division:—Messrs. J. F. Blackett, R. E. Thomas, and A. J. M. Wright.

Bristol General Hospital.—Mr. H. G. Kyle, M.B., B.Ch. Oxon., has been appointed Surgeon to the Hospital, and Mr. E. Hey Groves, M.D., B.Sc. Lond., Assistant-Surgeon.

Long Fox Memorial Fund.—We are glad to find that the work of the Honorary Secretaries to this Fund has been successful. A sum of £680 12s. 10d. has been collected. In accordance with the decision of the subscribers, a Memorial Tablet has been placed in the Cathedral, and arrangements have been made, in conjunction with the Board of Education, to found an Annual Lecture at University College, Bristol, on some subject connected with Medical Science, to be called the "Long Fox Lecture," and to establish a fund to be devoted to the assistance of a Medical Missionary Student.

Bristol Royal Hospital for Sick Children and Women.—The sudden death of Mr. Mark Whitwill on August 6th, 1903, removes from our midst one who has done much for the welfare of his city, and more particularly of the sick children and women who have derived benefit from the Hospital of which he was the founder more than forty years ago, and over which he has exercised a daily guardianship ever since. The never-ceasing interest and work of Mr. Whitwill in maintaining and improving the efficiency of this Hospital is to be commemorated by a proposed endowment of an existing ward at a cost of four thousand pounds. Such an enterprise would be thoroughly in accord with his own wishes, and we have no doubt that the sum required will be duly provided.

Royal Medical Benevolent College.—Several local medical men attended the Festival Dinner held on June 10th, when His Royal Highness the Prince of Wales presided over a goodly company. He mentioned that the Council of the College were anxious to raise the sum of £10,000 in order to place the finances of the Institution on a sound basis, and stated that a sum of over £6,500 had been collected. Mr. Paul Bush, our local honorary secretary, informs us that the list of contributions is being kept open in the hope that the sum required may be eventually realised. The 6th of July was the fiftieth anniversary of the laying of the foundation stone of the College, and the present is a fitting opportunity for making a strenuous effort to free the Institution from financial embarrassment. The fifty pensioners receive annuities of £30, and the fifty scholars are educated, boarded and clothed free of charge. About £8,000 a year is required to maintain the benevolent side of the Institution, and as there is not much in the way of assured income, fresh subscribers are urgently required if the good work is to be carried out as fully in the future as it has been in the past.